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amateur radio action

Volume 7, Issue 9

On Sale: 1 January 1985

*recommended price only

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Claude Olive Media, Cnr Upper Roma St. and Eagle Terrace, Brisbane, 4000. Phone (07) 229 7744

PRINTER AND PUBLISHER:
Leonard J. Shaw, 23 Rowsley Road, Mount Eliza 3930

PLACE OF PRINTING:
Waverley Offset Publishing Group, Geddes Street, Mulgrave, Vic.

PROPRIETOR:
Newspress, a division of Syme Media Pty Ltd, 250 Spencer Street, Melbourne 3000.

AMATEUR RADIO ACTION is distributed in Victoria by Magdiss Pty Ltd, 250 Spencer St, Melbourne, 3000; in SA by John Fairfax & Sons Limited; in Tasmania by The Mercury, 93 Macquarie St, Hobart 7000; in NSW, Queensland, WA and New Zealand by Network Distribution Company, 54 Park St, Sydney, 2000

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Cover: Yaesu's FT-209RH handheld reviewed in this issue, with its circuitry in the background. Photo by Peter Smith.

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Seasonal Traffic

Tony Gilbert

Tony Gilbert VK3CE
(EDITOR)

The VI Prefix...

Just as we were preparing to seal off this issue and consign it to the printer as an early Christmas present (yes... it takes two weeks to print) we heard that **all Victorian amateurs** had been given permission to use the VI (Victor India) prefix, effective immediately, to celebrate Victoria's 150th Anniversary.

If you hold a VK3 call and wish to join in the celebrations for Victoria 150, simply insert VI3 instead of VK3 in your callsign. Don't ignore the fact that many overseas amateurs — and possibly many VKs — will be very keen to confirm contacts with your VI station so you will need to seriously consider the QSL situation.

The WIA Federal Office has recommended that amateurs use the special prefixes (in this case, VI3) only if they are prepared to QSL on request or QSL all contacts. This seems to be a fair request as the VI3 prefix is intended to promote Victoria, not your ego.

For those intending to have special QSL cards printed for the VI3 prefix, note that we have contacted the Victoria 150 Committee and confirmed that amateurs have permission to use the Victoria 150 logo on QSL cards for contacts made with the VI prefix.

There are some special rules regarding the logo. As the illustration shows, there is an 'isolation zone' which must be left clear around the symbol — no text or other visual material is to appear in this zone. If the logo is to be a single colour, that colour must be **black**. The three-coloured logo should be used if possible and, in this case, must be PMS Process Blue (top section), PMS 361 Green (bottom section) and Black (all type). It must be printed on a white background. There must be no borders or boxes around the logo.

On the subject of Victoria 150, the South Pacific Contest Club's "Victorian 150th Anniversary Contest" will be held on the Australia Day weekend as part of the official calendar of events for Victoria 150.

This is the only known official activity for radio amateurs during the 150 celebrations so we recommend that you all get in and have a go. Victoria 150 plaques have been organised as trophies for the section winners in this contest and these will make a beautiful souvenir of the 150th for future generations.

Full rules for the contest appeared in Vol. 7, Issue 8, but the main thing to know is your IARU Grid Locator. To help you out on that one, we've drafted a map of Australia showing the IARU Grid layout of many of the larger cities and towns. Although far from comprehensive (if we'd put 'em all in, you

wouldn't be able to read it at all), it will give you a reasonable guide to the locator for your area.

If you cannot work it out from the map, or if your town or city appears to be on the border of two locators, refer to the tables in our last issue where you will be able to calculate your locator from your longitude and latitude. If everyone just knows **their own** grid locator designation, the contest will go off like clockwork and we'll all have a lot of fun.

To use the map, the squares number from "00" in the bottom left corner of each large (bold line) square. They number up to "09" at top left and "99" at top right. So Alice Springs, which is inside large square "PG", is in Column "70", Row "05" — it's IARU Grid Locator, then, is "PG75".



No text or other visual material can appear over the Logo or intrude into the isolation zone A. The area A is determined by measuring the distance between the base of the symbol to the base of the first line of type.

To give you some more examples using the map: Melbourne is in "QF", Column "20", Row "01"... hence "QF21" for Melbourne; Sydney is in "QF" as well, but in Column "50", Row "04"... "QF54" for Sydney; Hobart is a little more difficult as you need to count from the top — Square "QE", Column "30", Row "04"... "QE34".

We hope this makes the locator system a little easier to understand and use and will look forward to hearing you in the Victoria 150 Contest on 26/27 January!

To Contributors...

From the number of phone calls we've had lately asking what ARA requires of article contributors, it must be time to give you all another run-down on the procedures.

Articles can be on any subject directly related to amateur radio — if you're not sure, give us a ring and we'll tell you. Copy should be typed and double-spaced where possible

with a one-inch margin on the left side of the page. Neat hand-written copy is acceptable.

Photographs can be black/white or colour prints — a colour slide or two would also be appreciated if the subject matter might lend itself to a cover photograph.

Project or technical articles should include all relevant diagrams. These should be drawn on graph paper (blue line paper where available) in ink for ease of handling by our artists who do not have technical qualifications.

There is no size limit on contributor articles — we believe that a subject should be given as much space as is required to cover all the important information. As has been said before... they should be like a woman's skirt: long enough to cover the essentials, but short enough to maintain interest.

Finally, yes we do pay for contributor articles... but we won't say how much. Payment is calculated according to a formula which takes account of the amount of work we must put into each article before it goes to print (rewriting, drawing diagrams, retying, etc). Let me just say: don't give up your day job to write for ARA.

Keep sending those articles in — we've been very pleased with the standard of contributor articles in 1984 and look forward to even better in 1985! Don't forget, it's your articles that provide the variety in ARA... we're simply informative, it's you that's interesting.

We were wrong!

Yes, we do make mistakes... and you, the readers, are always quick off the mark to make sure we don't miss our blunders. In the last issue, I mentioned keeping contact with "VK2BJS" while enroute to Mellish Reef. Well VK2BJS has written to us and explained that he doesn't recall the events described and looks forward to meeting the other person of the same callsign.

I can't even blame the printers this time! In my seasick haze, I failed to make notes of that part of the proceedings and had to rely on memory... the kind gentleman who kept us entertained on 40 metres was, in fact, Dave VK2BSJ, assistant Editor of Australian Boating magazine in Sydney. Sorry Dave... and Jim VK2BJS.

Happy New Year...

The cartoon on the opposite page was penned by our talented Art Director, Linda Weil, who has become something of a favourite with many of our readers for her cartoons and illustrations. If we have any other readers with cartooning skills, we'd like to hear from them as well.

With 1985 now here, our thoughts should turn to what we can expect in the next year

Continued Page 8

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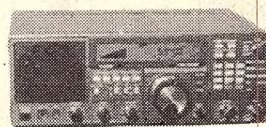
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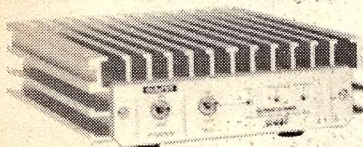
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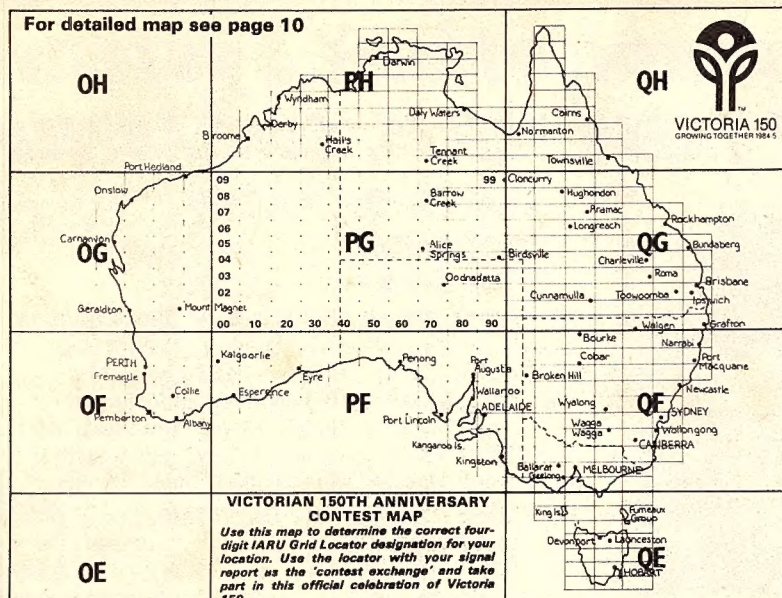
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or so. Here are a few thoughts from this desk:

- **Radiocommunications Act** — the first regulations attaching to this Act are already in the pipeline but will not affect amateur radio to any great degree. However, we can expect some amateur-type regulations — or draft versions, at least, to appear in 1985 and these could be quite a bit different to what we've become accustomed to.

- **Amateur Operator's Handbook** — a "new" version of this 1978 classic best-seller is already circulating in draft form and should be released some time in the first quarter of '85. It won't contain any great shocks, but should help to clear up much of the confusion resulting from recent changes.

- **Digital Techniques** — a new range of VHF-UHF equipment will begin to appear on Australian markets this year with such features as computer-control, callsign en-

coding and automatic identification. It would be reasonable to expect that many amateurs will wish to use these features and that much of the technology will spread to other areas of the hobby — like repeater control.

- **WARC Band Operation** — this is still up in the air, but the ARRL is considering at present whether award and contest operation should be extended into the 24 MHz band. If you have any views on this, write to the WIA or direct to the ARRL at 225 Main St, Newington, CT 06111, USA.

- **Jamming and Interference** — this is still a serious problem on VHF and has spread its tentacles of late to the HF bands as well. With new regulations and greater powers under a new Act, we expect DOC will be making inroads into these pests in 1985... they made a good start in '84 actually!

- **The Sunspot Cycle** — still on the decline and due to bottom out in the next year or two, this will remain the biggest obstacle to a vigorous, dynamic and expanding Amateur Radio Service in 1985. We must find new ways to attract those who are mildly interested in the hobby and to keep those who are frustrated by the lack of activity on favourite DX bands.

That's all from the (still chaotic) editorial desk of Amateur Radio Action. We are looking forward, with your help and co-operation, to another good year in 1985. Look after yourself, enjoy the holiday season — those of you who have one — and we'll see you next issue. Until then... Happy New Year!



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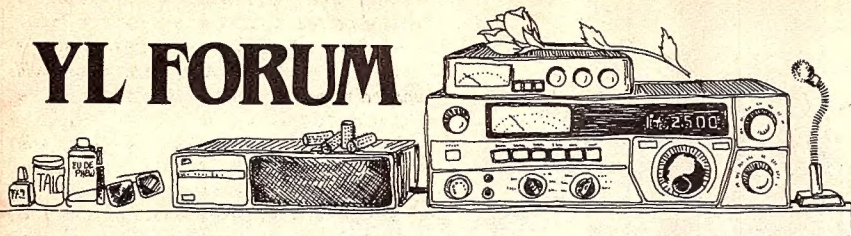
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YL FORUM



By Kirsti Jenkins-Smith VK9NL, P.O. Box 90, Norfolk Island 2899

YL Forum has featured in A.R.A. for more than a year. On the threshold of 1985 it is time to stop and think. A forum should be a meeting place, perhaps with some discussion on matters raised. There has been little of that. I sometimes think of myself as standing on a soap-box, talking, talking, talking, with only trees listening in mute silence.

Maybe other YLs are wondering why I do not use the column to talk about YL nets, contests etc — something pertaining to YLs only. The reason is, as I wrote to Tony at the onset of the column, that I do not consider a special pigeon hole for YLs necessary. I would rather try to encourage YLs to participate fully in amateur radio, on an equal basis with the OMs. There is nothing to stop us.

Before I took up amateur radio, I often listened to amateurs talking on the bands. One day, two OMs were engaged in a discussion about YLs. They agreed YLs were tolerable as long as they knew their place. They even agreed women should be allowed to work — as long as they stuck to sewing, cooking and cleaning! I was fascinated. This was after all more than 20 years after I had first gone to sea as a radio operator. Were women's lot Down Under really so far behind times? It was therefore with some trepidation I ventured on the amateur bands a couple of years later. Would I meet Rip van Winkle?

I did not meet old Rip. On the contrary I met a bunch of nice OMs and YLs who welcomed me with open arms. I was told about nets and contests and awards. Nobody tried to be patronising or tried to push me into typical YL gatherings. Realising quickly that we were all equals, I decided to use my freedom to the full.

With limited time available for my hobby, I have to forgo certain things not on the top of my list, YL nets and news included. This does not mean that I don't read YL news. Of course I do! And I was pleased to read that YLs had been publicised in a popular maga-

zine. Such features will attract more women to the hobby.

Generally speaking, women do not often get any mention if they have participated in any adventure on an equal basis with men. This is okay. She has done her bit, and her gender has nothing to do with the fact. Inequality is only if she has done nothing at all, but still rates a mention only because of her sex. No skill, no achievement, no experience, but female. That sort of thing, a vestige from the dark ages, still occurs even in amateur radio publications.

Jean K1IJV, who writes YL NEWS AND VIEWS in QST magazine, requested opinions about her column in 1983. Linda N2YL replied strongly against such features of someone whose only claim to the limelight is that she happens to be female. "If I were to be singled out for any recognition, I would certainly ask that it be for what I have done, not merely for what I am", said Linda. "Hams are willing to allow people to prove their own worth".

I tend to agree. As long as YLs are singled out for no other reason than being female, we will continue to be considered not quite up to standard, with excuses made for our feeble-mindedness... And perhaps even some of us come to expect such excuses being made.

Several top DXers, traffic handlers and contesters around the world are women. Let us not insult them by playing on the "weaker sex" bit, no matter how tempting it may be. Brute strength is quite unnecessary in amateur radio. Operating techniques and courtesy are what will gain us respect in the long run.

After 75 years of women's involvement in radio or "things electrical" as it was called then, 1985 calls for a realistic mature attitude where a pigeon hole for YLs must be considered an anachronism. It has taken less time for women drivers to be fully accepted. But then, there aren't any special roads or highways set aside for them.

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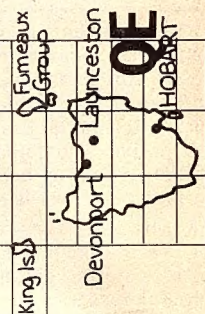
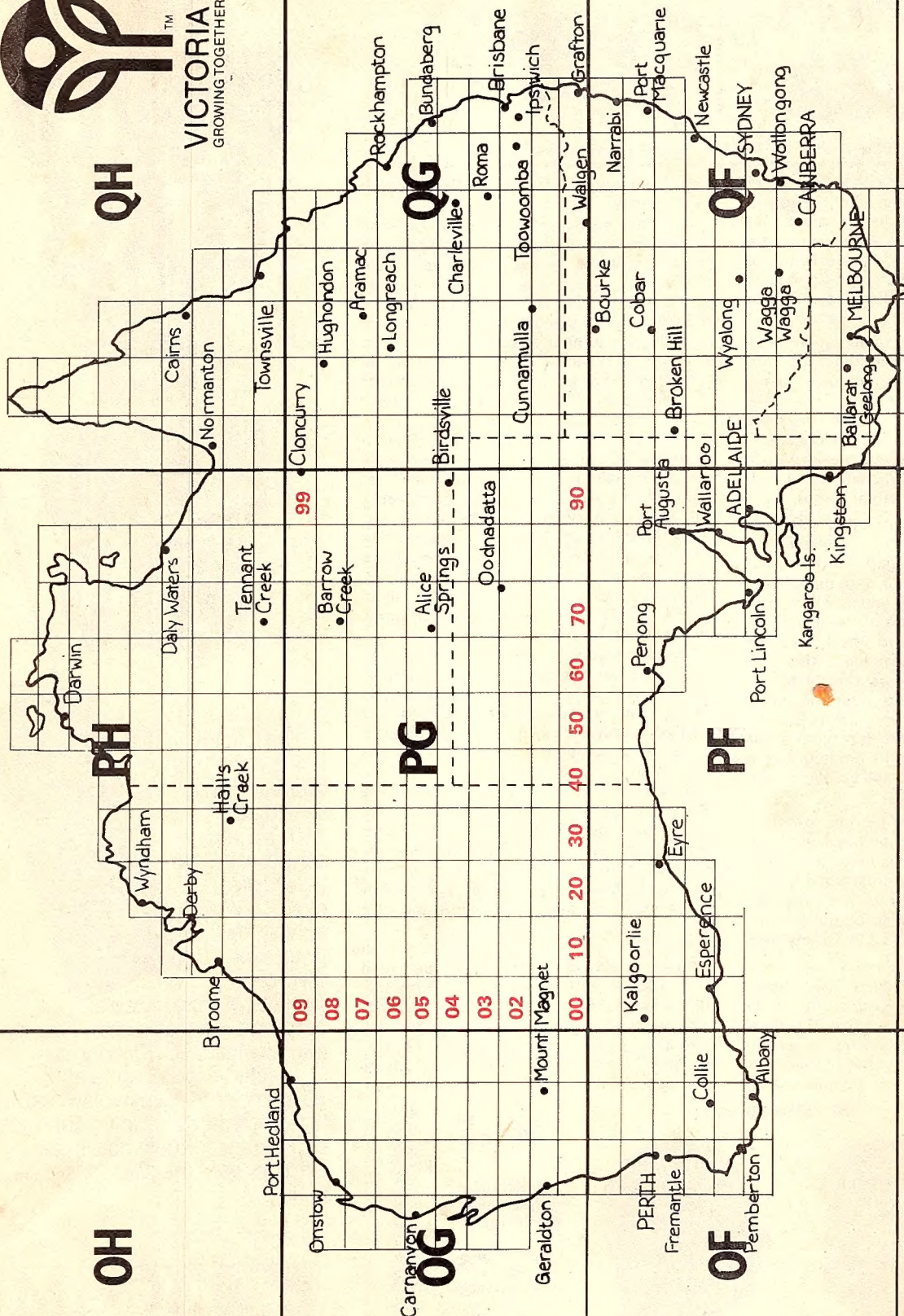
QF

OE

QE

VICTORIAN 150TH ANNIVERSARY CONTEST MAP

Use this map to determine the correct four-digit IARU Grid Locator designation for your location. Use the locator with your signal report as the 'contest exchange' and take part in this official celebration of Vic 150.



NEWS NEWS NEWS DESK.



Dashmount Keypad

Signalling Technology Pty Ltd has recently announced the release in Australia of the Sigtec S-1651 selcall mobile-to-mobile unit: a high performance, 5-tone sequential calling unit for use on VHF and UHF mobile radio systems.

This remote dashmounted keypad is designed specifically for operating convenience. Each mobile using selcall is given an individual code number and will only respond when their number is called by the base or another mobile. The S-1651 introduces a new level of convenience for this function.

The beauty of selcall is that it effectively provides almost telephone-style operation without the need to listen to unwanted traffic or disturb other mobiles in a commercial fleet.

The Sigtec S-1651 is compact, quick to install, inexpensive and very simple to use. An inbuilt "honk horn" facilities is standard with this unit and alerts the driver if a call comes in while he is away from the vehicle.

For further information on the Sigtec S-1651, contact Signalling Technology Pty Ltd, 2 Apsley Place, Seaford, or phone (03) 786 0077.

Amateur TV On Shuttle

The launch of NASA's space shuttle mission 51-H in April 1985 will see another landmark for amateur radio if a recent report in "A5", the US amateur television magazine, proves correct.

A5 reports an interview on 2 October with Lous W. McFadin W5DID, of Johnson Space Centre, which confirmed an earlier report that Mission 51-H and another 1985 launch would carry amateur radio equipment into space.

According to the A5 report, both SSTV and FSTV appear to be on the agenda for Mission 51-H and NASA has reportedly asked Johnson Space Centre to "look into the possibilities of placing an on-board SSTV converter" on the flight to be manned by Dr Tony England WOORE.

"We are currently looking into ways of obtaining SSTV equipment and interfacing into the main TV video system on the space shuttle spacecraft", McFadin said. "Even the possibility of having a separate SSTV picture-only camera is being considered.

"Our goal is to be able to send the highest resolution black and white and color SSTV pictures for those who can receive such pictures on earth and also reward those longtime supporters in SSTV with the regular resolution modes."

Such an event for SSTV has been long dreamed by many video amateurs, says the A5 "Special Report". The idea can be traced back as far as December 1982 during telephone calls between WB0QCD, of A5 magazine, and Westlink's WA6ITF who, together with Peter O'Dell and Bernie Glassmeyer of the ARRL, talked about the possibilities of placing "taped" SSTV pictures on board STS-9 with W5LFL.

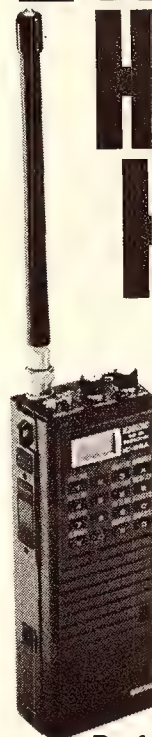
The idea was never implemented due to the very cautious approach to amateur radio's first shuttle operation, but the concept received a great deal of attention when thought was given to future missions.

Discussions on obtaining SSTV equipment are now underway between W5DID at Johnson Space Centre and commercial SSTV manufacturers and the proposal may be to use "automatic sequence SSTV techniques" — i.e., six to 12 second color pictures followed by 1-72 second high resolution color image, 36 and 72 second hi-res formats are also possible.

The A5 article also emphasises the hope that "the regular resolution 8-second black/white format can also be included to allow thousands of older SSTV converters to be utilised for such an historic event".

The SSTV converter will be interfaced with the space shuttle's own on-board microwave FSTV CCTV video relay system. Output of the SSTV pictures may be viewed directly on Ten Metres (Courtesy of A5 Amateur Television Magazine, PO Box H, Lowden, Iowa 52255-0408).

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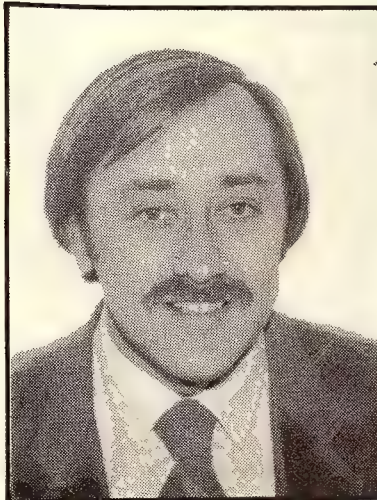
Vicom Australia Pty Ltd celebrated its 10th year of operation in November 1984 and, according to its Chairman and Managing Director, Mr Russell Kelly, Vicom owes its huge success and its beginning to amateur radio.

Incorporated in November 1984, Vicom quickly became a force in the resurgence of amateur radio during the 1970s. Today, Vicom is essentially a communication and engineering company specialising in HF and other radio communications, as well as sophisticated electronic test equipment.

With an annual growth rate of some 30 percent in Australia, Vicom is a major force in its field and is in direct competition with some of the world's largest multi-national electronics groups.

Australian owned, Vicom opened its first overseas office in New Zealand in 1980, where it is experiencing an amazing 50 percent annual growth rate.

While it has concentrated largely on government business in Australia, New Zealand, Papua New Guinea and Singapore, Vicom has now entered a new field with the introduction of the GRiD Compass Computer.



Russell Kelly VK3NT, Chairman and Managing Director of Vicom, is an accountant who has had extensive financial and computing experience with several large companies. Mr Kelly has lectured and consulted in accounting and computer science and has been actively involved in communications and electronics.

Other founding board members of Vicom Australia include Michael Goode VK3BDL of the stockbroking firm, A.C. Goode and Co, Peter Williams VK3IZ, Vicom's Director of Technical Services, and Neil Lambert ZL2JO, responsible for the New Zealand operations. Russell, Peter and Michael all served on the WIA Victorian Division Council. Peter Williams was also for some time WIA Federal Secretary and IARU Region 3 Secretary.

Vicom itself was born "over a few drinks" before a WIA Victorian Division Council meeting.

"At the time, most ham equipment was only available after a two or three month wait", Mr Kelly said. "It was difficult to go into a store, see the equipment and then make a purchase.

"We felt there was room for a new amateur radio company with ample stocks and excellent service".

Vicom Australia reached an annual turnover of \$1 million after just three years of operation and, after five years, had doubled this to \$2m per annum.

"When CB radio came along, we could see that whilst commercially it would be a passing fad, there would be ramifications in the amateur radio market", Mr Kelly commented.

But Vicom's plan from the beginning was that reliance should not be placed on amateur radio: "We did not wish to operate at the whim and fancy of our Japanese principals, since the Australian Distributor could be summarily dismissed at any time."

Vicom's emphasis has now moved to the high-tech electronics area. "We expect our turnover to double within the next 12 months. Next year we will 'lash out' on research and development projects, an operation we have pursued gingerly because of the hard work building a client base".

The Labor government offered as an election promise a 150 percent tax deduction for R&D work. Mr Kelly believes the R&D incentive would provide greater encouragement to high technology start-ups in Australia than the Federal Government's other recent initiative to promote a venture capital market. But he also feels that caution must be exercised as a large number of countries are setting up to expand their high-tech activities.

Vicom Australia is assured of an exciting and prosperous second decade... thanks to amateur radio!

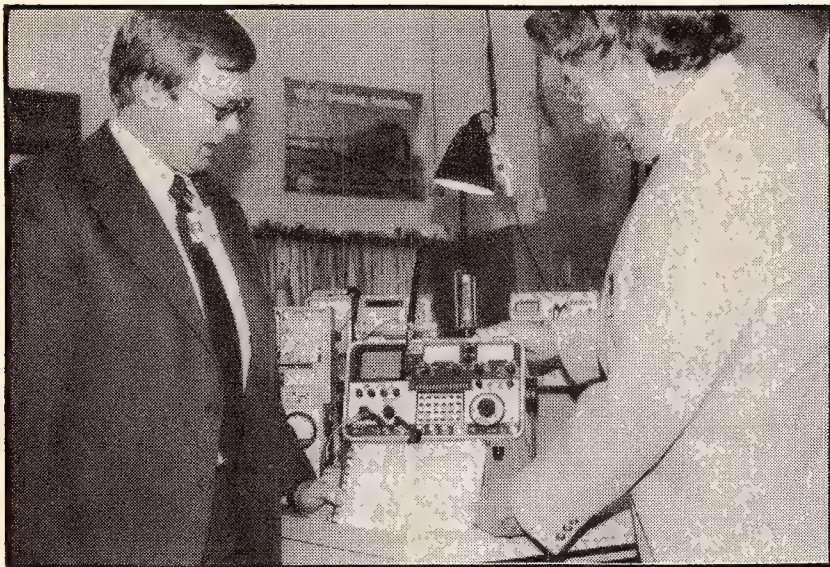
AM Stereo Starts

Radio stations throughout Australia will be able to start broadcasting in AM stereo from 1 February 1985, the Minister for Communications, Mr Michael Duffy has announced.

The go-ahead for AM stereo followed the decision to adopt the Motorola stereo transmission system in October 1984. This came after some confusion

when it was believed that broadcasters would be given the choice of four systems, making consumers also choose between radio stations if stereo reception was desired.

Stations which were testing other AM stereo transmitting systems before the standard was announced would now have to replace the exciter component with a Motorola exciter.



Communications Monitor

The Commonwealth Aircraft Corporation has purchased an item of test equipment to be integrated into its new software-controlled repair and calibration system, the first such unit to be supplied in Australia.

Called an FM/AM-1200 Communication Service Monitor, the unit is manufactured in the USA by IFR Incorporated and distributed in Australia by Vicom Australia Pty Ltd.

The service monitor will be used as GTE for the new RAAF Training Aircraft Program and the Corporation's commercial line of business.

Pictured with the new test equipment is Mr Alan McCubbin, Manager (Electrical and Electronic Products) with CAC; and Mr Peter Williams, Director of Technical Services, Vicom Australia Pty Ltd.

The equipment will be used to monitor and test avionics and commun-

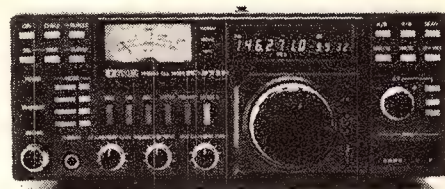
ications equipment which automatically prints out frequency error, modulation characteristics and other details to give an accurate assessment of equipment performance. In keeping with modern trends, the CSM is fully portable and AC or battery powered to allow in-field or bench use.

The manufacturer, IFR Inc, also produces a complete line of specialised test equipment for avionics use and, with the introduction of new aircraft in the public transport sector, Australia's domestic airlines also use IFR avionic equipment to check weather radar systems.

IFR have also pre-empted the introduction of cellular radio in Australia (a forthcoming ARA feature) with a line of specialised test equipment for servicing mobile telephones.

For details of the IFR lines, contact Vicom Australia offices in Melbourne, Sydney or Wellington.

THE WORLD CLASS 2 METRE BASE



Do you remember the IC-211? The boys at ICOM do. You see, it set the pace for 2 metre base station performance many years ago. Optically chopped tuning, processor control, digital PLL, and many features at that time unheard of. In 1984 ICOM are still setting the same high standards for 2 metre base station performance. Dual VFO's, multi mode, 10 Hz PLL tuning are a few of the basic features. This world class radio is supported by a large range of options, many can be seen at your local ICOM dealer.

Project PCBs

Demand for printed circuit boards for ARA's power supply project in Volume 7, Issue 3, has been so great that the author of the project, Adrian Tobin VK3ATT, has decided to make available a number of good quality boards at cost price.

The initial supply of 25 boards has been produced at a cost of \$20 each including postage. This board contains all the main circuitry for a basic 20 Amp supply. An extender board provides capacity to extend the supply capacity to 40 Amps — however, as the cost of producing this board would be nearly the same as the main board, it will not be made at present.

Cheques or money orders should be made payable to Avtronics, 84-86 Arundel Road, Park Orchards 3114.

CCARC Field Day

All roads lead to Gosford on the 17th of February 1985 when the Central Coast Amateur Radio Club will hold its 28th Annual Field Day at the Showground, Showground Rd, Gosford.

Events to be held on the day will include an open scramble, pedestrian fox-hunts, radio quiz, stalls, childrens events, outings and a bus trip.

The field day will be held whether it is wet or dry, hot or cold. Accommodation in the area is scarce at this time of year so early bookings are essential.

For further information, contact D McCutcheon VK2PEP/YUP on (043) 40 1153 between 9 am and 6 pm weekdays, or write to CCARC at the club address with an SASE for a full program of events.

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ARA EQUIPMENT REVIEW

The Sophisticated Portable

The hand-held transceiver — or 'handie-talkie' — has certainly come a long way since the days of the thumbwheel frequency selector and fixed crystals. Today, almost every feature available in a base or mobile transceiver can also be found on the humble HT, making radios like these a much more attractive alternative.

Yaesu's latest offering, the FT-209R (or FT-209RH in the case of the review model) is an excellent example of the advances made in compacting state-of-the-art technology into tiny packages for VHF and UHF operation.

Said to be a combination of the best features of the FT-207R and FT-208R, the 209R provides 3.5W of RF output (or 5W for the RH model) over the entire two metre VHF band.

Its central microprocessor provides all the features you would normally expect to find only on much larger transceivers:

- memory channels
- memory scanning
- programmed scanning
- priority monitor
- keypad channel entry
- optional tone calling

The two 4-bit microprocessors which control the FT-209R provide 39 operator commands from the 20-key control pad. A front-panel meter monitors incoming signal strength, relative transmitter output power and/or battery pack condition, with the function selectable from a front panel switch.

A unique feature in the FT-209R is the 'battery saver' function: operational battery life is extended by having the receiver check a listening frequency for only short 'sample' periods — the sample rate is user-selectable over 10 steps.

An optional Tone Squelch Unit provides access to any of 37 CTCSS tones for selective calling, each of which can be stored in the very versatile memory section of the FT-209R.

Keyboards features

The design of the FT-209R keyboard is, itself, worth some comment. Yaesu has selected an extraordinary color scheme for this model which, aside from adding to its attractive appearance, also has a functional use.

The keyboard is 'segregated' into functional areas: the 'power save' function keys are colored light mauve; the 'tone squelch' controls are colored light blue; the keyboard 'beep' controls are colored light mauve; and the remainder of the keyboard has a dark blue background. A color-coded instant reference guide, if you like.

The 20-key pad contains 19 dual-function keys and the 'F', or FUNCTION key itself which decides which purpose a key is being put to when pressed.

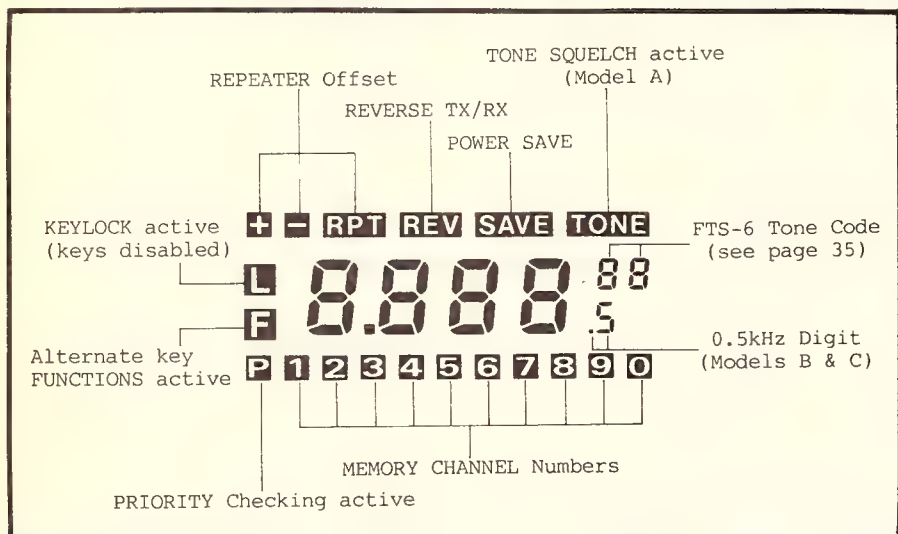
Operation of the 'F' key brings a reversed-field 'F' up on the liquid crystal display to tell the user that a second-function operation is in progress. A time period of three seconds follows during which the second-function operation must be commenced — if not, the microprocessor returns to its 'idle' state.

Keys 1-3 have as their second function the selection of an offset for repeater operation: '+ RPT' for positive offset; 'SIMP' for simplex operation; and '-RPT' for negative offset on transmit. The review model defaults to a 600 kHz offset for this function. The offset can be re-programmed by simply entering the new offset (eg, "0500" for 500 kHz), pressing 'F' and 'SHIFT'.

To select a repeater offset, or return to simplex, the user simply presses 'F' followed by a key 1-3 (see above). The selection is displayed in a reversed field on the LC dis-



YAESU FT-209RH



play (except for simplex operation, when no offset display is required).

The right hand keys in the top row have a primary function of manual scanning up or down and a secondary function of starting manual scan of memory channels when pressed while a memory channel is being displayed.

Keys '4', '7' and '*' are used for the power save function. Key 4 enters the sampling rate to be used. Key 7 enables the power save. The asterisk key disables the power save. This function is described in more detail later in the review. The asterisk key has as its primary function an instant recall of the contents of the 10th memory channel which can be set up with a "call channel", or a favorite operating frequency.

Keys '5', '6', '8' and '0' are used for the CTCSS tone squelch feature (optional). Key '5' enables the tone squelch unit. Key '6' is the 'tone set' function, which allows selection of any one of 63 CTCSS codes — the selected code is displayed to the right of the frequency. Key '8' activates the encoder only, so that CTCSS codes are sent on transmission, but not required for reception. Key '0' disables the tone squelch unit. Note that CTCSS codes are not yet in general use in Australia.

Keys '9' and '#' control the key 'beep' function which, given the sensitivity of the keyboard on this radio, is best left on at all times. The '#' key also enables a priority monitoring function as its primary purpose — this means that the last memory channel selected will be 'sampled' at regular intervals for activity while another non-memory frequency is in use.

Key 'M' is used to write to the 10 memory channels. To enter a frequency into memory, you simply choose the channel (1-10) and press 'M'. When pressed without first choosing a channel number, the 'M' key will display which memory channels have been programmed with information.

The second function of this key, 'TX M' is used for split frequency operation. The re-

Above: the features of the yaesu FT-209R liquid crystal display unit.

ceive frequency is programmed as if it were a normal memory channel, then the transmit frequency is programmed by pressing 'F' before the 'M' key. Both are stored in the same memory channel.

Key 'MR' is used in the same way as Key 'M', but this one is used to recall the contents of a programmed memory channel. If you only wish to recall the last memory channel you used, 'MR' pressed alone will do this.

Key 'C' is used as a delete key when programming on the keyboard. This key will cancel the last digit pressed or delete digits in the reverse order to which they were entered. The handbook says that "... this key is provided in respect of Murphy, for those elite operators who find themselves prey to his laws, or those disciples of his who dedicate themselves to finding ways to befuddle microprocessors".

The second function of the 'C' key is used to delete entirely the contents of a programmed memory channel. This is a complicated process which we won't describe. Suffice to say that you cannot do it by accident!

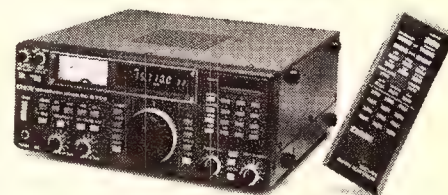
The 'SHIFT' key, which was described when we discussed the offset selection, has a primary function of frequency 'exchange' ... in other words, it reverses the TX and RX frequencies for listening on your transmit frequency or the input of a repeater.

Key 'D' is the 'enter' key for all keyboard frequency selections and doubles as a 'STEP' key, displaying the stepping rate for manual scanning and enabling alteration of the rate.

Digital Display

The display on the FT-209R, much of which has already been touched upon during the keyboard description, is interesting in that so much information has been compacted into such a small space, especially

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ARA EQUIPMENT REVIEW

The Sophisticated Portable

since fixed-function liquid crystal displays have been used.

The display shows the last four digits of the operating frequency and a range of special function information like repeater offsets, 'REV' to indicate that your TX frequency is being displayed, 'SAVE' to show the 'power save' feature is in use, 'TONE' to show that the tone squelch unit is operating, 'F' when the FUNCTION key is pressed and 'L' when the keyboard is locked.

It also displays the memory channel numbers (1-0), the CTCSS tone combination in use (1-63), a 0.5 kHz digit on this model with 12.5 kHz stepping, and a 'P' to show the priority monitor is in use.

Power Saver

This is a function which we have not seen before on any hand-held (or other radio for that matter). It allows the FT-209R to listen on a frequency for extended periods without drawing the usual 45mA which it would on squelched receive.

It does this by listening only for 300ms at a time — a sampling period — and removing power from all other circuits when it is not sampling. When a signal appears, the receiver reverts to normal. If the carrier disappears for more than 5 seconds, the 'save' function is automatically reinstated. Very clever!

The 'save ratio' is selectable from 1:1 (300ms off — 300ms on) to 10:1 (3 Secs off — 300ms on) in 10 stages. Unless programmed otherwise, it will always default to a 2:1 ratio or 300ms on, 600ms off.

The current drawn during this power saving operation is as low as 11mA (compared to 45mA normally) on 10:1 ratio or 26mA on 1:1 ratio, so it can extend battery life considerably.

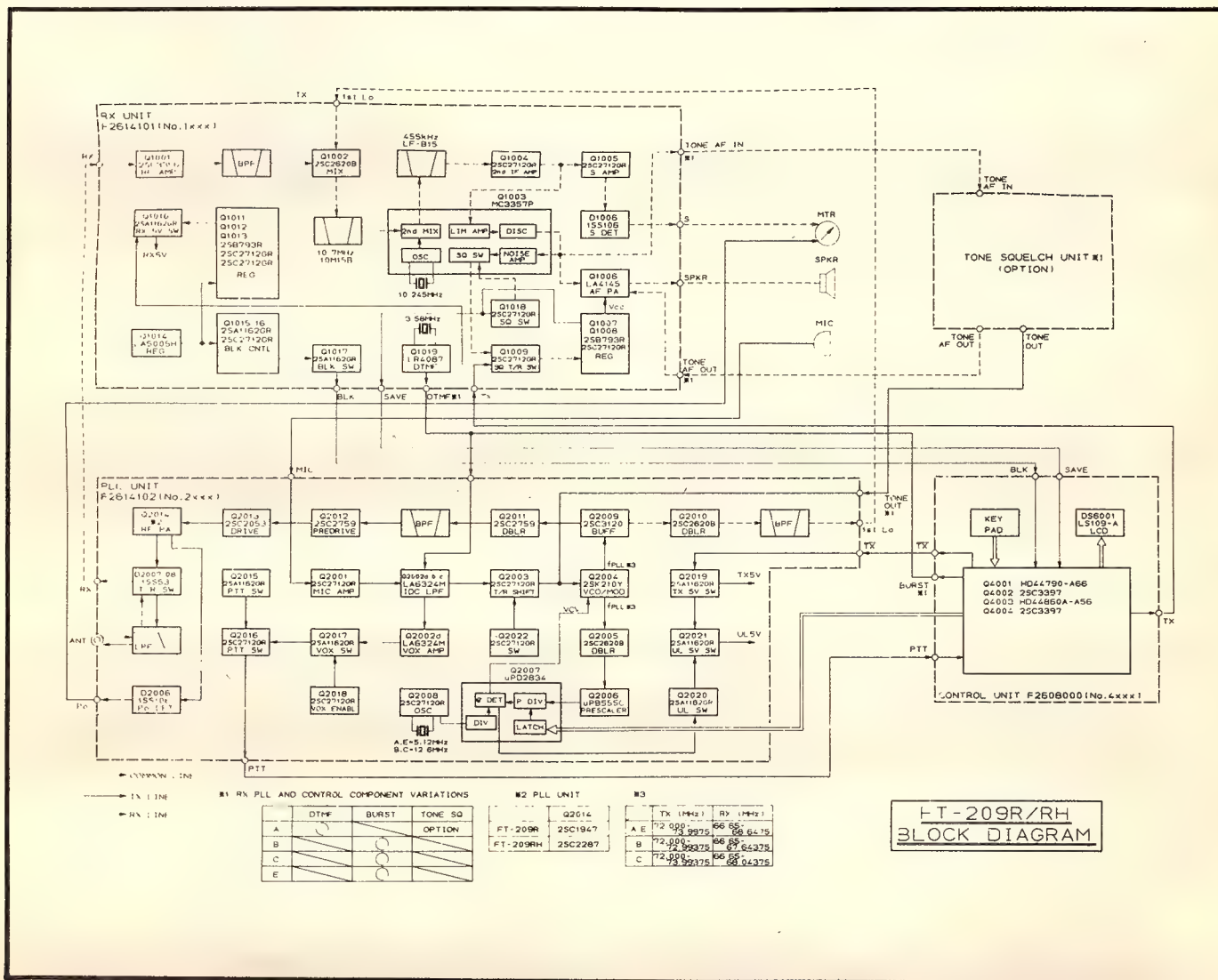
Memories & Scanning

The FT-209R has 10 memory channels, each of which can store frequency and repeater offset or split frequency information. The 10th memory channel (memory '0') doubles as an instant-recall 'call channel' at the touch of a single button.

As well as being able to scan all 10 memories, as described in the keyboard section, you can scan only selected memory channels without having to delete the contents of the ones you don't wish to scan.

A channel can be 'masked' by pressing 'MSS' (memory scan skip), the second function of the 'MR' key which we neglected (intentionally) to mention before.

Each time 'MSS' is pressed (after the number of the memory you want to skip), all the memory channel numbers are displayed except those which have been masked or deleted (a process we declined to describe earlier). The channel which has just been masked will still be displayed, but as a flashing digit.



YAESU FT-209RH

If you get confused about which channels contain information and which ones are simply masked, pressing the 'M' key twice will sort you out. The first press will display all currently programmed channels. The second press shows only those being scanned.

Reinstating a masked memory channel requires a three-key operation: you must press the channel number, followed by 'MR' and 'M'.

It is also possible to scan a range of frequencies between any two adjacent memory channels using the 'PMS' (programmable memory scan) key.

If the 'PMS up' key is used to start the scan, scanning will be from the lower memory number to the higher one — ie, if you press memory '3' and 'PMS up', you will scan between memories '3' and '4'. If you press '3' and 'PMS down', you will scan between '2' and '3'.

The scan rate for this 'PMS' operation can be altered (on the review model) between 5 kHz and 50 kHz steps. The standard scan rate is 5 kHz steps, but is altered to a multiple of that rate by pressing a key 1-0 ('0' being 10) and the 'STEP' key — eg, if you pressed '5' (plus 'F') and 'STEP', the scan will be in 25 kHz steps.

The alteration of the PMS scanning rate does not affect the frequency stepping rate for manual scanning using the up/down keys. This is always in 10 kHz steps.

If you find that the adjacent memory channels aren't convenient for PMS scanning, you can 'swap' them around so that they are on the FT-209R. To do this, you press the first channel number followed by 'MR', then the second channel number followed by 'M'.

If the frequency segment you are scanning does not contain an important frequency you wish to monitor, you can also use the priority monitoring facility when in the PSM ode.

The priority monitoring facility can also be used to check more than one channel of interest. This is a complicated routine, but one which will be very useful to many operators. It allows you to priority scan one to ten channels (with masking if desired) while actually listening on a non-memory frequency. This can also be used while in the PMS mode.

General Comments

You will no doubt have come to the conclusion by now that the Yaesu FT-209R is a very versatile transceiver. The twin-CPU design has given Yaesu the scope to include more functions than most HT users will know what to do with. It also leaves a lot of scope for the adventurous programmer to experiment with techniques that are not covered in the operator's manual and this, in itself, can be seen as a new development in 'black boxes'.

For the less adventurous operator, the FT-209R can be set up in a matter of seconds

and the keyboard locked. It can then be used like any other handheld, ignoring the special features this unit has to offer.

Unfortunately, due to time constraints, we did not have a chance to put this unit through the normal laboratory tests, but its performance on air leaves little doubt that it lives up to its manufacturer's claims.

On the high power level our FT-209RH draws 650mA from its 10.8V NiCad battery pack for a 5W output. The FNB-4 battery pack which was supplied is a 500 mA/H unit and this would mean less than one hour of continuous use before recharging. There is a low power position supplying 500 mW (for the RH model) — battery life would thus be extended 10 times or thereabouts.

Our only real criticism of the unit comes in the usual area — that of audio output. The FT-209R has an audio output of only 450 mW into 8 ohms and the speaker is only 3 cm in diameter. Frankly, there is not enough output and you must have the unit up to your ear to hear anything unless you are in a very quiet environment.

This criticism is dampened a little by the accessories list which includes the popular YH-2 headset with its lightweight earphone and boom mike. If you use the YH-2 you will probably have little to worry about in the audio department and your modulation will also be better than with the built-in electret microphone. Using the YH-2 you can also take advantage of the VOX circuit in the FT-209R which includes a LOW VOX setting for noisy environments.

Also included in the accessory list is a range of battery packs, the MH-12 hand microphone, NC-15 base charger, PA-3 portable charger and many other similar items.

The FT-209R comes standard with a simulated leather case and charger plus the YH-14A rubber duck antenna which you would be, as in the case of almost all handhelds, best advised to quickly discard in favour of a telescopic 5/8 antenna. The rubber duck is an excellent dummy load, but a rather poor substitute for an antenna.

The real talking point in the FT-209R is, we feel, the handbook. Perhaps it's just that we've become so accustomed to the Japan-English normally supplied with these units, but it is refreshing to see a Japanese unit with a real English language instruction manual that even runs to humour (see the "Murphy" comment earlier). Although far from simple to follow, it is at least not hampered by poor grammar and atrocious spelling.

All things considered, the FT-209R/H can be considered to be the standard which other handhelds in 1985 will have to try to compete with if they want to make the grade. At less than \$400 for the RH high power version, they also compete well in price with their Icom and Kenwood counterparts.

Thanks to Andrews Communications for supply of the review model. We recommend that handheld buyers take a good long look at this one before they make a decision.

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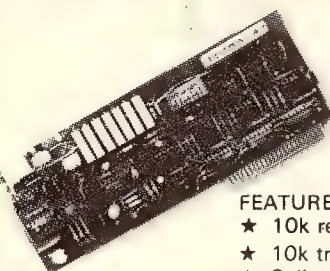
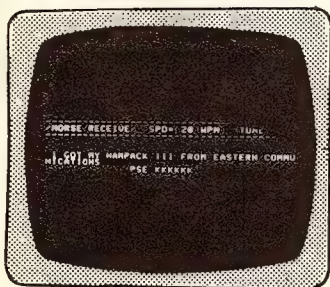
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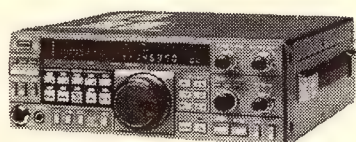
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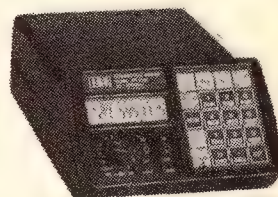
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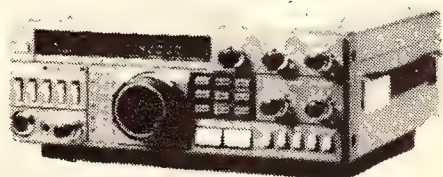
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Japanese Gear...

More Than Meets The Eye

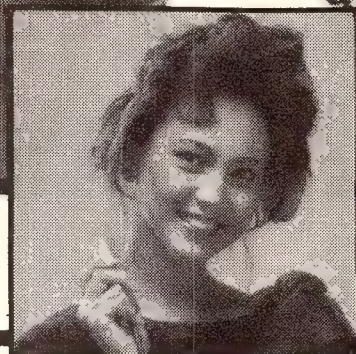
By Thomas E King VK2ATJ

Maspro, Kuranishi, FDK, WARP, Comet, Tokyo Hy-Power, Sansui, Kokusai Electric, Delica, Nagara, Hidaka, Sagant . . . these names may be unfamiliar to Australian ham shacks, yet to Japanese amateurs they are almost as common as Kenwood, Yaesu and Icom.

I became aware of these names and an incredible variety of other manufacturers whose names we have never heard and whose gear we have never seen in Australia when I made my initial trip to Tokyo a few years back. Mr Hiroshi Onada JM1RYK, Deputy Chief, Publicity Section, for the Japanese Amateur Radio League, provided me with directions to Akihabara in English (and Japanese in case I got lost!).

This neon-lit electronic Disneyland took me by surprise as it was not only dazzlingly brilliant but the modern shops contained every conceivable electronic and electrical goody. I wasn't interested in the latest microprocessor controlled shaver or remote control compact disc player, so I skipped over the consumer items and went directly to the rows of transceivers and test equipment. Several of the six shops I visited in Akihabara were fully fledged amateur radio equipment stockists so I didn't have to walk past solid state hairdryers or touch switched food processors to get to the goodies.

Wherever I went, my reaction was always the same: I was stunned by the variety of goods, 95 percent of which I had never seen before and, except for the 'big three', labelled with unfamiliar brand names by the score, some of which I could not even pronounce.



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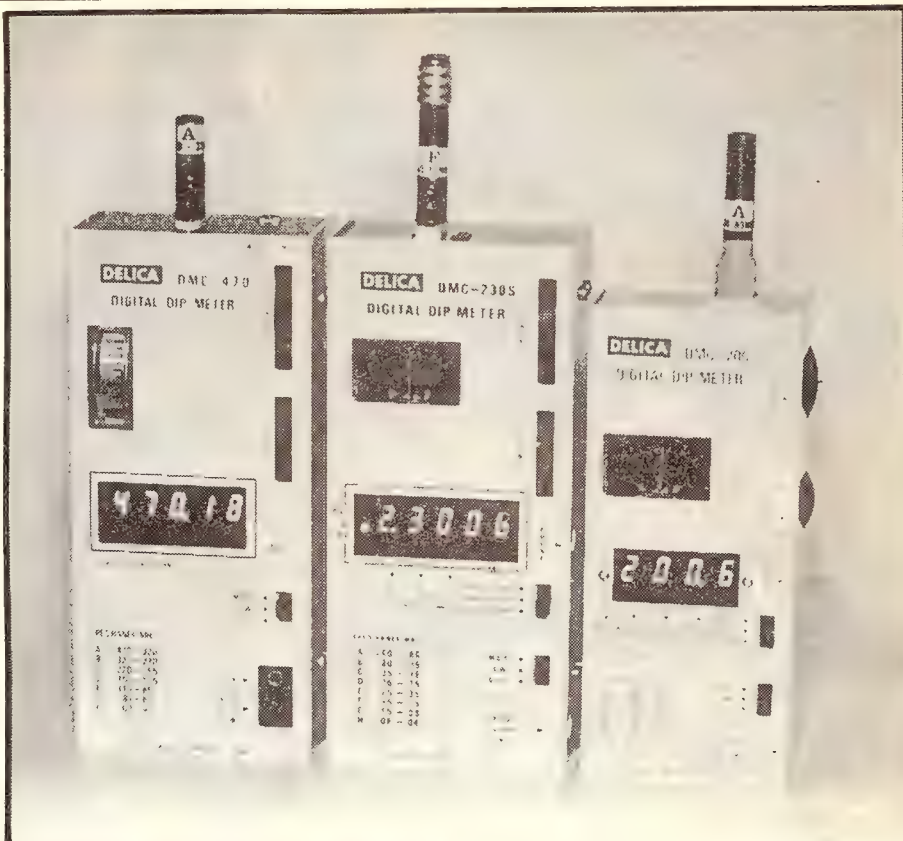
Japanese Gear...

Since Japan Airlines passengers (like all other airline travellers) are only allowed 20kg of passenger luggage on Sydney/Tokyo/Sydney flights, I loaded the shopping trolley with an eye to my luggage limit and the limit of my bank balance. While my right hand grabbed a 40m CW transmitter kit and my left hand plucked a seven element 2m yagi from the shelf, the "damage" was tallied on the latest solar-powered calculator. I waddled out with my spoils and carefully packed them for the flight back to Sydney.

The long winter nights just passed and the shortage of band openings on 1.2 GHz provided the stimulus to go back through my notes and re-live that short excursion to a real electronic fantasyland. I'm already planning another trip to Japan as soon as I pay off the last one!

There are a number of Aussie amateurs who do make it to Japan, whether it be on a business or holiday basis. They savor the delights of Akihabara for themselves, not forgetting the pleasures of Tokyo and the rest of Japan. A great number of VKs would like to own the latest piece of Japanese designed and built equipment and there's hardly a single amateur amongst us who doesn't enjoy learning about the state of the art.

With this in mind I contacted a number of Japanese manufacturers and distributors. The idea was to highlight just a few products available from manufacturers whose equipment is not well known in Australia. In most instances, the company spokesmen said they would happily export single quantity units to individual amateurs in Australia.

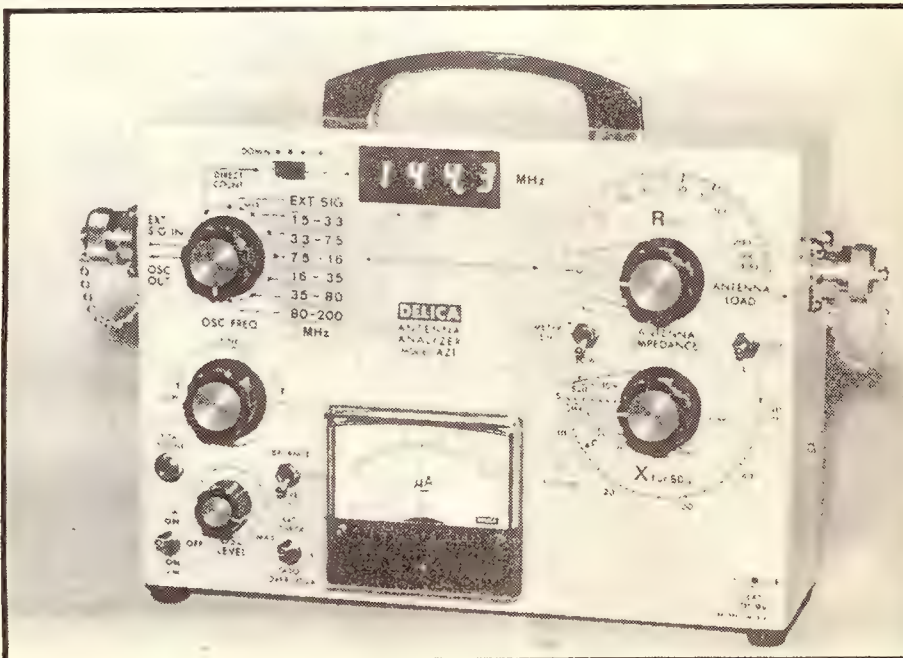
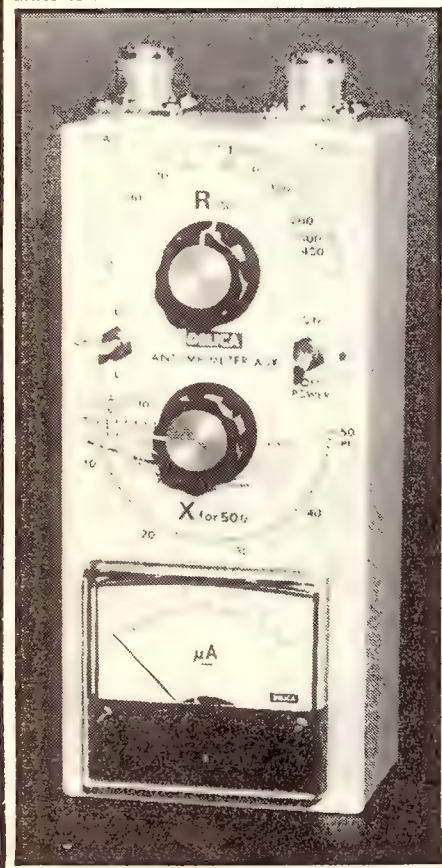


Above: Also from the Delica range, a trio of sophisticated grid-dip meters for various operating parameters.

BRAND:..... Delica
COMPANY:.. Mita Musen Kenyusho Ltd
ADDRESS:..... Minami Azubu
 1-2-1 Minato-Ku
 (PO Box 78
 Tokyo (106), Japan
PHONE:..... 03 (451) 2533
CABLE:..... MITAMUSEN TOKYO
CONTACT:..... M Ibaraki, Manager

Below Left: The Delica antenna impedance meter A3X from Mita Musen... a must for the dedicated antenna enthusiast.

Below: Delica's antenna analyser AZ1... the ultimate antenna building tool from Mita Musen.



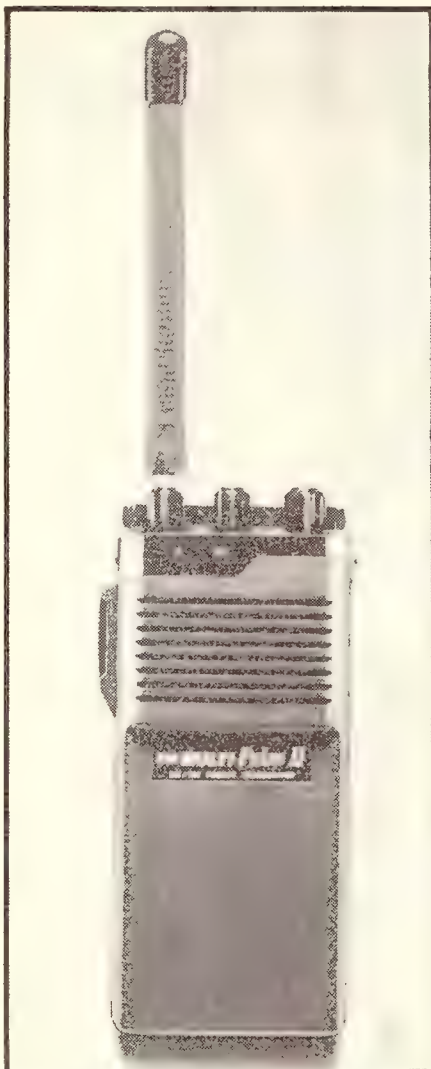
While Mita Musen is hardly a common name in VK ham shacks, the company has been producing Delica measuring instruments for over 60 years. Of interest to Australian amateurs are the company's dip meters and antenna tuning units.

Delica Antenna Analyzer AZI is a type of RF bridge used to measure the antenna's resonant frequency and impedance. With its built-in oscillator, it works as a signal generator for adjustment of a receiver. And with the connection of a small loop antenna, AZI converts into an absorption type frequency meter or a "field strength comparator" to examine the gain or radiation pattern of an antenna under test. This unit costs US\$360 by sea parcel or US\$385 by air parcel.

Delica Antenna Impedance Meter A3X has a frequency range of 1.5 MHz to 150 MHz. It has a dummy load attached and can check the impedance of the coax as well as the velocity factor. The A3X is priced at US\$140 by sea or US\$154 by air.

Digital Dipmeters Models DMC-230S (200-4 MHz in eight bands), DMC-200 (200-1.5 MHz in six bands) and DMC-470 (470-48 MHz in seven bands) are standard, compact dipmeters with digital display and plug-in coils. Powered by AA cells, all three units use the heterodyne method to measure a very weak signal with great accuracy. Prices are: DMC-230S at US\$288 (sea) or US\$246 (air); DMC-200 at US\$175 (sea) or US\$190 (air); and DMC-470 at US\$264 (sea) or US\$281 (air).

BRAND:..... FDK
COMPANY:..... FDK International Corp.
ADDRESS:..... DAITA West 507
 3-41-8 DAITA Setegaya-ku
 Tokyo 155, Japan
PHONE:..... 03 (414) 8660
CABLE:..... FDKINTL
TELEX:..... 2423005 FDKINT JAPAN
CONTACT:... H Martsui, Marketing Div



Pocket VHF/UHF transceivers highlight the extensive range of amateur goodies from FDK International. And with measurements of 6 x 2½ x 1½ inches (68 x 154 x 41.5 mm) the Palm-Comm 2m and 70cm rigs really do fit the pocket.

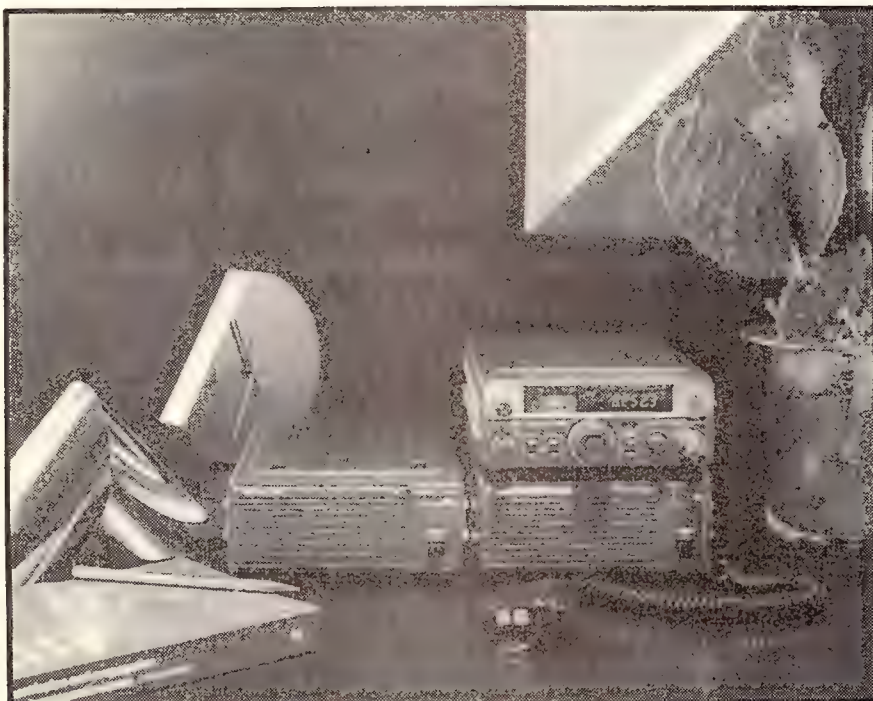
The Palm-Comm series is a second generation design of one of FDK's most successful lines. These compact handheld transceivers have "extremely high receiver sensitivity" — specs say 4 dBu at 20 dB NQ — and a transmitter output of more than 1.5W for the 2m rig and 1W for the UHF unit.

Housed in durable plastic cases, the low cost transceivers provide up to six crystal controlled channels, switchable from the top panel, together with volume and squelch controls. Both rigs are supplied with NiCad battery pack, antenna, earphone and instruction manual. Optional accessories are an external speaker microphone, headset, soft case, pharynx microphone, DC charger and AC charger.

'FDK has been very successful with its Sky Voice synthesiser air band monitor and RX-40 synthesiser VHF FM receiver', said Mr Matsui. The PLL Sky Voice has full coverage of the VHF air band between 118-136 MHz. There are 720 thumbwheel selectable channels available in 25 kHz steps. FDK's RX-40 covers 144-146 MHz (a 141 to 180 MHz version is available) and has 800 thumbwheel selectable channels. Current consumption of less than 35mA means this unit can be used continuously for more than 10 hours before recharging with the supplied Ni-cad pack and AC charger.

Above: Also from FDK, the Multi-Palm II pocket transceiver for two metres . . . this one is available locally!

Below: FDK International's Multi-150X transceiver — an all mode unit for two metres with expansion to 70 centimetres.

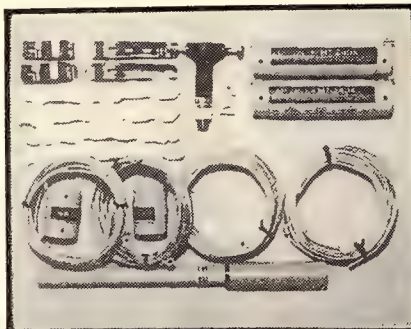
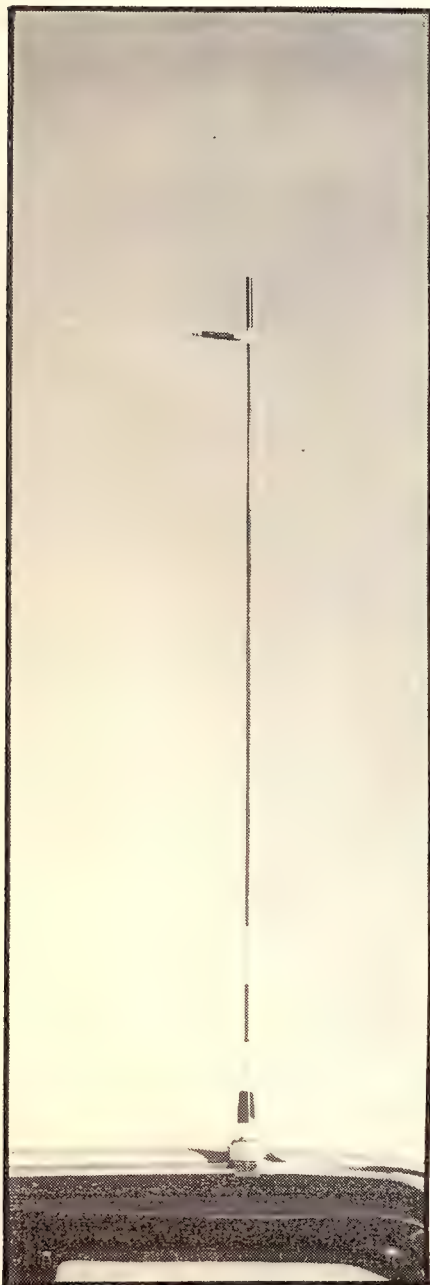


Japanese Gear...

If you are looking for an all mode 2m transceiver now and thinking of purchasing a UHF rig a little later down the log, then FDK's Multi-750X will be of interest. This 20W rig, with dual VFO and full scanning from the microphone, has a CW semi-break-in circuit with sidetone and it can be expanded to the UHF band with an EX-430 transverter, including full crossband operation.

The Expander 430 (at 163 x 73 x 260 mm, about the same size as the Multi-750X) gives full coverage of 430-440 MHz with selectable 1 or 10 watt power outputs. The dual VFO facility enables one VFO to be programmed on 2m and the other on 70cm.

Mr Matsui said that FDK would fill export orders directly from individuals. Prices and delivery information are available from the company.



BRAND: Sagant Antenna
COMPANY: Saga Denshi Kogyo Co Ltd
ADDRESS: Shinmura Nabeshima-cho
 Saga-City 840-01, Japan
PHONE: 0952 31 0103
TELEX: 746315 SAGANT
CONTACT: Joji Koyanagi, Director

Saga Denshi Kogyo is involved with one product line: antennas and accessories. Within that one line, however, are 70 odd different antennas and gadgets, making the company one of the leading manufacturers and distributors in Japan. Saga Denshi Kogyo's antennas for amateur, CB, broadcasting and professional use are divided into a few categories: VHF/UHF, "verandah" antennas, wire antennas, "Adcock" or direction-finding antennas, whips for mobiles and handhelds, and accessories.

Model AP-144DII is an extended double-5/8 wavelength collinear antenna designed for the 144 MHz band. The antenna, priced at 1300 Yen (work that out at 200 Yen to

the A\$ on your solar powered calculator), is equipped with a vacuum tube type Hermet button arrestor inside the feed point. This device will carry up to 6000 Amps of impulse current to the ground.

Designed for 21 (24.5), 28, 50 and 144 MHz, the Sagant Antenna Model CM-144W is a quad-band whip. Priced at 7500 Yen, this antenna can be used during mobile operation or when fixed portable when extended out of the verandah of a high building. VSWR is less than 1.5:1; gain on 2m is 4-5 dB; and 200W can be pumped through the quad-band unit.

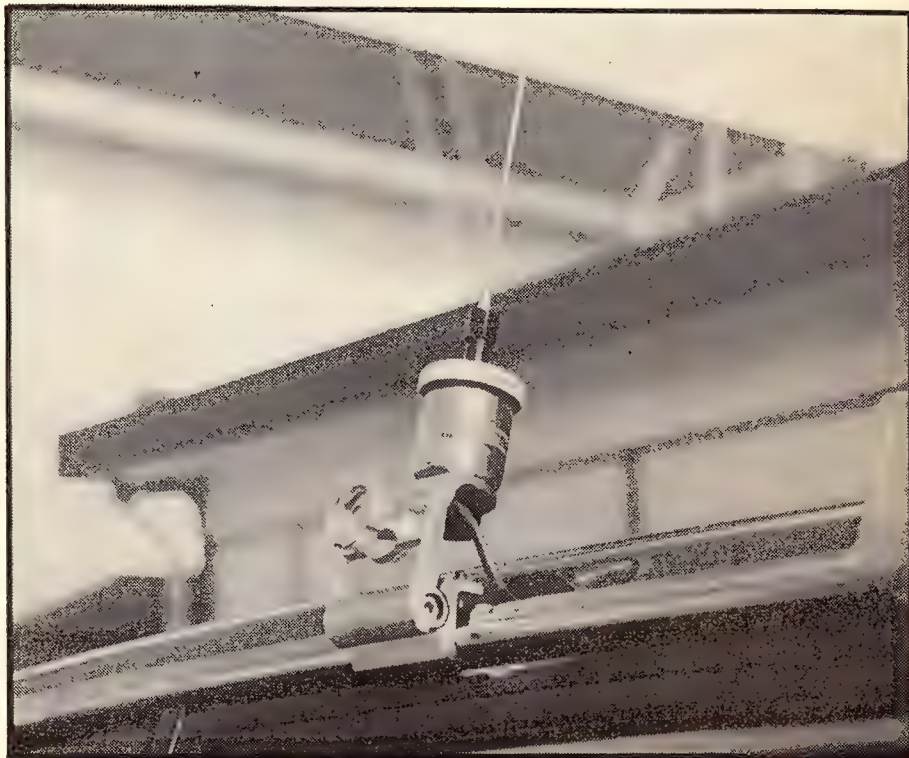
"The MT-240 five-band wire antenna kit is one item", said Mr Koyangi, "that has found its way to Australia". Included in the 13,500 Yen kit is clear vinyl-covered copper wire (3.5 mm, 7 strand), a 3-40 MHz broad band 1kW ferrite balun, coils and miscellaneous hardware for a complete 80, 40, 20, 15 and 10m antenna system. VSWR is charted lower than 1.2:1 on all bands except 15m where the figure is under 2:1.

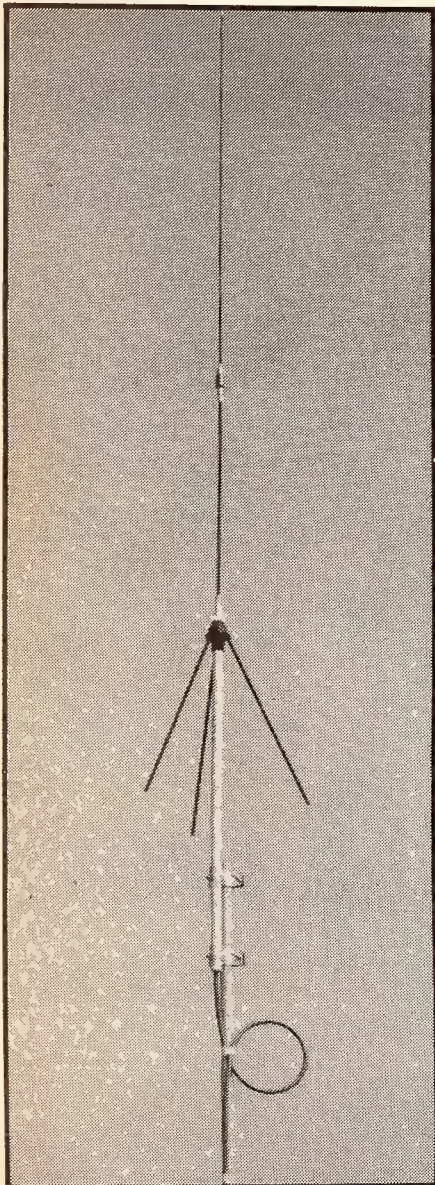
About 200 TA-144VW half-wave 2m antennas have found their way into Australia. This whip antenna, priced at 6000 Yen, has a gain of 4.5 dB over the entire 2m band. With an optional bracket, it folds over the side of the car when not being used.

Above: Also from Sagant Antenna, the MT-240X five band HF antenna which comes with everything you require.

Below Left: From Sagant Antenna, the quad-band mobile whip for 21, 28, 50 and 144 MHz.

Below: Saga Denshi Kogyo also produce this Sagant two metre mobile antenna, the TA-144VW half-wave.





BRAND:..... Tokyo Hy-Power
COMPANY:... Tokyo Hy-Power Labs Inc
ADDRESS:..... 1-1 Hatanaka 3-Chôme
 Niiza, Saitama 352, Japan
PHONE:..... 0484 81 1211
TELEX:..... 2962887 THPWR JAPAN
CONTACT:..... F Koike, International
 Marketing Section Manager

Above: The mast-mounted GaAsFET pre-amplifier for 70 centimetres from Tokyo Hy-Power Laboratories ... 18dB received signal gain with a noise figure of only 0.8 dB, it will handle 100W of transmitted signal through its circuitry.

Top Left: Sagant's flagship VHF antenna, the AP-144DII, a dual 5/8 collinear base station vertical.

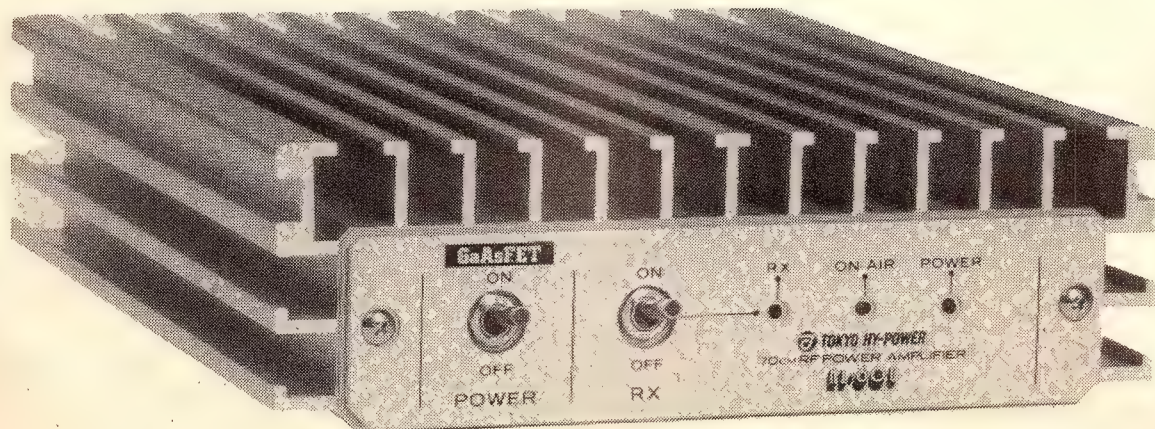
Below: The HL-60U high power linear amplifier from Tokyo Hy-Power ... 60 watts output from 15W of drive plus a 15 dB gain GaAsFET preamp. A two metre version, the HL-60V, is also available.

VHF/UHF transceivers, linear amplifiers and antenna couplers are manufactured by Tokyo Hy-Power in its electronics plant outside Tokyo. Mr Koike noted that while Emona Electronics and Andrews Communications Systems are authorised Tokyo Hy-Power dealers in Australia and export to individual amateurs in this country was not possible, he felt ARA readers would be interested in new equipment trends.

Newest of the new at Tokyo is a tiny micro handheld UHF transceiver. Measuring just 65 x 160 x 32 mm, the 200 mW transceiver named the "Micro 7" draws just 20 mA when squelched. Three pairs of crystals can be installed between 430 and 439,999 MHz. The Micro 7 comes with four batteries, a whip antenna, earphone and manual. a number of optional extras are available: external speaker/mike, NiCad battery pack, battery charger, leather case, tone encoder and voice controlled operation unit.

To boost those weak 70cm and 2m signals, Tokyo Hy-Power has developed a pair of mast-mounted receiver pre-amps. In the case of 70cm, the GaAsFET pre-amp exhibits a gain of 18 dB with a noise figure of just 0.8 dB. The 2m unit has a gain of 20 dB and an NF of 1 dB. Power requirements are 9 to 15 Vdc with a typical current requirement of 200 mA at 13.8v. The unit will take a maximum power of 100W and is capable of handling FM, SSB, CW and ATV signals. A heavy duty vinyl-chloride cover houses the pre-amp.

To boost your transmitted signal on 70cm, Tokyo Hy-Power is marketing its HL-60U high power linear amplifier. Capable of 60W output, the HL-60U has an inbuilt low noise GaAsFET pre-amp with 15 dB gain. The all mode 70cm amplifier has a companion 2m unit, also capable of 60W with 15W of drive, listed as the HL-60V. Several other VHF amps can be found in the THP lineup including the HL-35U 35W with 5W drive on UHF) and the HL-160V25 which, with 160W out for 35W of drive, should just about provide a strong enough signal to rattle the windows in Akihabara.



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If you want to tune into the world, you really only need three things: a pair of ears, a shortwave radio, and an antenna. Getting a good shortwave receiver is less of a problem these days, but most shortwave listeners and radio amateurs wish they had more space to put up a better antenna. After all, you can own the world's best receiver, but without a suitable antenna all you'll hear is interference and a few of the stronger signals.

Radio Nederland Wereldomroep (or Radio Netherlands, as it's called in English) is a shortwave broadcasting station based in Hilversum, The Netherlands. It has built up a unique consumer information database on shortwave receiving equipment, publications and accessories, with the aim of assisting shortwave listeners around the world.

As you will read further on, the station will shortly have a new transmitting centre located at Flevo-polder. But, before it enters service on 31 March 1985, the Flevo site will be the location of a rather unique amateur radio experiment.

On the third weekend in February, two ordinary amateur radio transmitters will be taken out to the new transmitter site. The transmitters will be set up as usual, following the requirements laid down by the Dutch PTT licencing authorities. The difference is that these transmitters will be connected to some of the largest directional antennas in the world!

The plan is to use the new Flevo transmitting site antennas **on amateur radio frequencies** for a period of 36 hours. Not only will this be a unique chance to work with such high-gain antennas and examine the results, but it offers a rare opportunity for radio amateurs and shortwave listeners to listen out for a station with a difference... a station that is about as close as possible to the shortwave enthusiast's dream station equipment!

The amateur station will be on air between 0600 UTC on Saturday, 16 February 1985, until 0800 UTC on Sunday, 17 February 1985. One transmitter will operate on a non-directional antenna intended for European reception. The second will make use of the giant curtain arrays at the Flevo shortwave transmitter site.

The direction of the curtain array beam will follow the pattern of regular English lan-

On 16/17 February 1985, an "amateur radio station with a difference" will take to the airwaves from the Netherlands city of Flevo... one that's certain to "tickle" the ionosphere. This report from Jonathan Marks of Radio Netherlands' shortwave programme, "Media Network".

guage broadcasts from Radio Netherlands — ie, at 0730 UTC, when Radio Netherlands is on air to Australia and New Zealand, the amateur station will also beam in that direction, although obviously on different frequencies.

This special event station will operate both SSB and CW modes. The special callsign **PA6FLD** has been issued by the Dutch PTT: the PA6 being a very rare Dutch prefix; and the "FLD" standing for "Flevo-Land".

A special QSL card depicting the new Flevo transmitter site and the amateur radio operation will be sent to all those submitting correct reception or contact reports. Licensed radio amateurs will, of course, be able to talk directly with operators at the station. But shortwave listeners are encouraged to look for the station too. Exact frequencies for the amateur stations will be announced during the "Media Network" program nearer the date, but listed below are the times, frequencies, and headings of Radio Netherlands' English language programs for that weekend:



Radio Netherlands transmitter sites.

Radio Netherlands English Service:

Saturday, 16 February 1985

Time UTC	Frequency kHz
0730	9770, 9715
0930	15560, 11930, 9895, 6045, 5955
1030	9650, 6020
1330	17605, 11935, 9895, 6020, 5955
1430	21480, 17605, 11735
1830	9540, 6020
2030	17605, 15560, 11740, 11730, 9540

Beamed To:

Australasia
Europe
Australasia & Caribbean
Europe
South-east Asia
East/Sthn Africa & Europe
West Africa

Sunday, 17 February 1985

Time UTC	Frequency kHz
0230	9590, 6165
0530	9715, 6165

Beamed To:

East Coast USA
West Coast USA



A 'BIG GUN'

In 1927, The Netherlands became one of the first countries to recognise the power of the shortwave broadcasting medium. Early experiments via station "PCJ" in Eindhoven were convincing enough to prompt a solid investment in the future. But the shortwave dial has certainly changed these last 58 years and, in order to maintain and improve the flow of information from broadcaster to listener, technology has had to adapt too.

These days it is quite common to read in magazines that a new transmitter site is about to go to air. Radio Netherlands' solution, though, has some rather unusual aspects to it.

You can't just put a shortwave transmitting site anywhere! Not only are the antenna masts up to 120 metres high, but they need to radiate concentrated beams of energy into the air. Finding a nice secluded spot in The Netherlands, a small country with 14 million people, is a difficult task.

In 1937, the Dutch made broadcasting history when they constructed a wooden, rotatable, directional shortwave antenna. It was at a place called Huizen (How-zen), a few miles north-east from the studios at Hilversum. This huge construction would swing round to point the antenna in different directions. Today an inscription in an apartment block, the "PHOHI flats", marks the spot where that antenna once stood.

In the 1950s, shortwave broadcasting from The Netherlands moved to the centre of the country, to the village of Lopik in the province of Utrecht. There was room for future expansion in those days, but not now.

As the Lopik facilities began to show their age, the search started for a new place to put the shortwave transmitters. In fact, the solution was to start construction within a few miles, as the crow flies, of the old Huizen antenna site.

Four 500 kilowatt transmitters were ordered, along with one 100 kW reserve transmitter. But not only the transmitters and their buildings are new... so is the land they're built on!

28 May 1932 saw the birth of a new lake in The Netherlands, with an area of 1200 square kilometres. Completion of the so-called "Afsluitdijk", a dike some 30 km long, meant part of the former Zuiderzee was no longer open to the wild North Sea. This new area was given the name "IJsselmeer".

Plans didn't stop there, so began an ambitious draining scheme to create new areas of land previously covered by the sea. The largest of these, Flevoland, was pumped dry in two stages between 1950 and 1968. Today it is already an established area for arable crops... and now also for shortwave broadcasting.

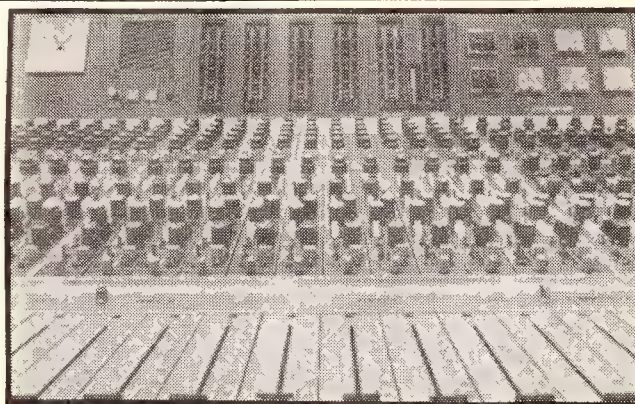
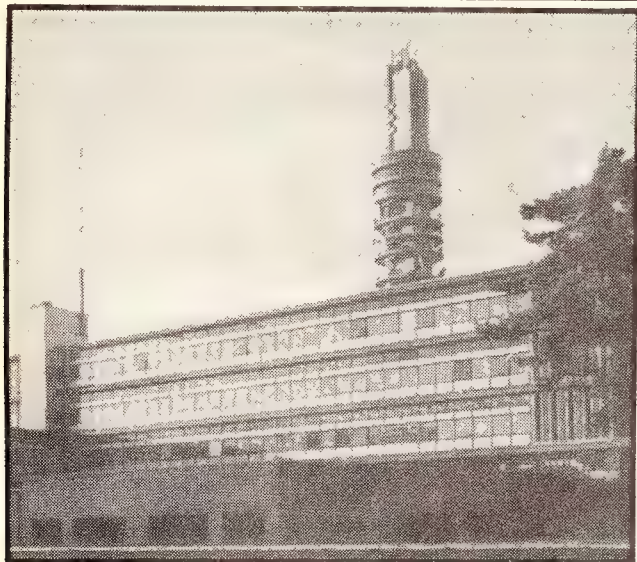
Radio Nederland Wereldomroep's new "Flevo" transmitting centre is also an ambitious project in its own right. To be efficient, a shortwave broadcaster needs efficient directional antennas, which means that for the lower shortwave broadcasting bands, such as 49 metres, this entails very large constructions. Since Flevo is four metres below sea level, the water table is quite high and the ground is also rather soft. New techniques have had to be found to anchor the antenna masts securely, since the totally flat polder means everything is exposed to the full force of wintry weather.

The new Flevo site. These directional curtain arrays will be used for the PA6FLD amateur operation on 16/17 February 1985.

Up in the air

Flevo is equipped with some so called "omni-directional" antennas used to serve nearby target areas in Europe. These radiate energy in all directions. But the days of being able to serve listeners all over the world with one frequency are over. Now "directional" antennas are far more important, especially to serve distant target area, but it means that interference to other stations, serving different parts of the world on the same frequency, is reduced to a minimum. This in turn contributes to less overcrowding of the shortwave spectrum.

Antenna design is a specialised part of engineering technology. A directional antenna is more than a simple dipole strung between two supporting towers. In fact, most of the Flevo antennas consist of sixteen dipoles, arranged in four rows, each of four dipoles, forming a "curtain array". A screen of horizontally strung metal wires is put behind the stack of dipoles, acting rather like a mirror. This ensures that energy is radiated in one direction only. The size of the dipoles is important, as some antennas are designed only to operate on four out of the total of nine shortwave bands used by Flevo for international broadcasting. If you try to operate an antenna on frequencies outside the ones it's designed for, it will not match electrically. Energy is then reflected back into the transmitter, and generally lost as excess heat.



Above: The sophisticated control and mixing panels used to produce Radio Netherlands' high quality broadcast programs.

Left: The headquarters building of Radio Netherlands at Hilversum.

Since Flevo uses about 3.5 million watts from the mains electricity (think of it as paying the electricity bill for 35,000 light bulbs), it's important that as much of this energy as possible is used for broadcasting programmes.

Whilst computer programs exist to calculate how a chosen antenna design **SHOULD** perform in theory, a lot of natural or man-made factors (like the type of soil, nearby metal antenna towers, etc) also have to be considered in practice. So having hung the antennas between the supporting towers, the Dutch PTT hired a helicopter equipped with special measuring apparatus, and switched the transmitter on with reduced power (20 kW). By flying in a circle with a radius of 2 kilometres from the antennas, it was then possible to plot the radiation patterns of each antenna. At a height of 500 metres, the beam direction is measured to within 2 degrees, together with the beam width, and elevation.

The exact direction an antenna will beam to, depends mainly on its physical orientation on the ground. The "star" shape of the Flevo antenna complex means that all directions of the compass between 050 and 290 degrees can be reached. It's also possible to electrically change the beam direction of some antennas. If an antenna normally beams due east (equivalent to 090 degrees) it can be adjusted to operate at 060, 075, 105 and 120 degrees as well. Changing the direction more than this would lead to undesirable energy loss in unwanted directions.

No antenna can be 100% efficient. As well as beaming energy in the desired direction, some signal will also go in the opposite direction. This is termed "back-radiation". If, for example, 500 kilowatts is beamed one way, as much as 50 kilowatts is often sent 180 degrees the other way. By design and careful measurements at Flevo, this back radiation has been reduced to a minimum. The ratio of radiated energy at the front of the antenna, against the power measured at the back, is now as high as 20 dB. This means that only around 5 kilowatts are radiated into the opposite unwanted direction.

All these factors are important in ensuring that the energy isn't wasted. Flevo is be-

lieved to be the first shortwave station where such intense antenna diagram measurements have been done from the air, before the transmitter site enters service.

With such high powers being used, the feeder lines to the antenna have had to be covered. At previous transmitting sites these were simply bare wires on poles, but since they offer a potentially lethal hazard to birds, extra precautions were taken with the new project. These feeders are now constructed of coaxial cable, which means that high voltage areas are screened.

On the ground

The transmitter design also contains some new concepts. Since shortwave broadcasting began, a system known as Amplitude Modulation, AM, has been used to get the signal from transmitter to receiver. The AM signal involves two components:

1. The "carrier" which puts the signal on a certain part of the shortwave dial, and is needed by the shortwave receiver as a sort of "reference point".
2. The modulation, which is actually the speech and music information the broadcaster wants to put across.

The problem is that more than 50% of transmitter energy is put into the carrier part of the signal, which in fact contains no programme information at all. Ways around this are planned for the future, with more efficient forms of transmitting techniques, but most require that the listener buys a new type of radio. This isn't practical yet. But modern transmitter design enables the use of a more efficient form of AM, known as Dynamic Amplitude Modulation (DAM). With normal AM in widespread use today, the level of the carrier remains at a constant level. In the DAM technique, the carrier power moves in step with the modulation. So, during a loud piece of music the carrier power is turned up, but when the music gets softer, the carrier power is turned down. This is done electronically, and can mean anything up to a 25% energy saving or more! This is achieved without a noticeable quality reduction of the signal at the listener's end. The use of DAM can be noted on the signal

strength meter of a shortwave radio, the needle moving in step with the programme being listened to.

This DAM technique, together with other energy saving designs incorporated into the transmitters, means that while the total power output of Flevo is 5 times that of Lopik, the power bill is only expected to rise by about 2.5 times for the same hours of usage. The transmitters are cooled by both water and air systems. Three hundred litres of water per minute passes through each sender, and the excess hot air is used to heat the building.

Computer technology is also used to the maximum. Changing frequencies at the old Lopik transmitter facilities was quite an ordeal. When moving from one metre band to another, this often entailed physically moving and tuning quite a number of parts of the transmitter. It's a credit to the transmitter crews that they managed to do this with the required precision in the short time available between programmes. Modern multi-band transmitters have eliminated the need for this type of manual labour. But engineering skill is now focussed instead, on maintaining a highly complex computer controlled switching system. New programme and frequency schedules are entered into a computer terminal at Radio Nederland Wereldomroep, where it's possible to monitor what's happening some 16 kilometres away.

The start of a new era

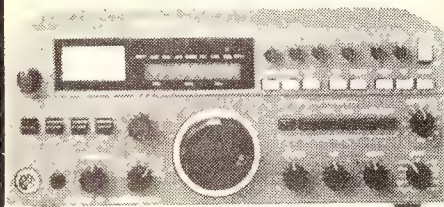
The testing phase of the transmitter complex is now nearing completion. A new programme and frequency schedule will commence on March 31st 1985, taking advantage of the ability to serve new areas of the world with a stronger signal.

The philosophy of Radio Nederland remains unaltered. As a non-commercial public foundation, financed from the Dutch radio-TV license fee, its aim is to bridge the information gap between this part of Europe and the rest of the world. This is done by not only examining one's own point of view, but also those in the listener's region. Only then can one speak of "communication".

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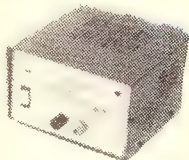
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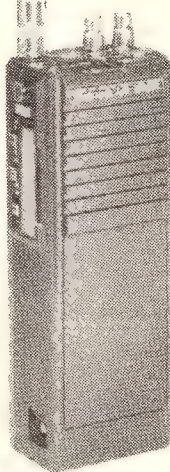
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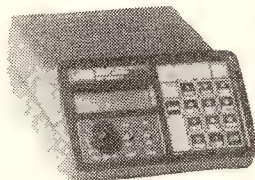
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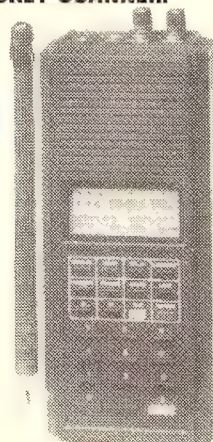
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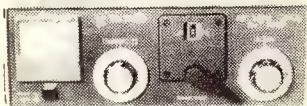


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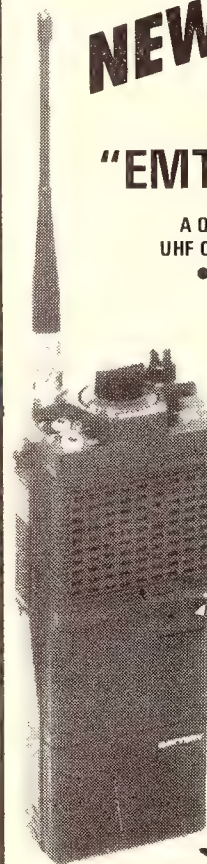
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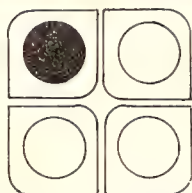
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SEE YOU AT



SEANET '85

by Thomas E. King VK2ATJ

Sun, sand, sea, sights and serenity . . . such enticements have lured travellers to the island of Penang for many years. For the 127 delegates to the mid November SEANET '84 Convention, however, such attractions took a definite second place, as the prime motivation for converging on this tiny tropical isle off the west coast of Malaysia was fellowship.

As in all the previous 13 SEANET Conventions this has always been the chief reason for the Asia-wide gatherings. The idea of a SEANET Convention began shortly after a new of a few hams in South East Asia was started in the mid 1960s. With the desire to put a known voice with an unknown body, the first SEANET Convention has been organised annually — usually during the second or third weekend of November.

Previous conventions have been sited in major South East Asia cities:

- ★ 1971 Penang
- ★ 1972 Bangkok
- ★ 1973 Singapore
- ★ 1974 Manila
- ★ 1975 Kuala Lumpur
- ★ 1976 Jakarta
- ★ 1977 Bangkok
- ★ 1978 Singapore
- ★ 1979 Penang
- ★ 1980 Manila
- ★ 1981 Jakarta
- ★ 1982 Bangkok
- ★ 1983 Singapore
- ★ 1984 Penang
- ★ 1985 Brunei or Manila (proposed)

The SEANET Convention in Penang was hosted by the Malaysian Amateur Radio Transmitting Society (P.O. Box 10777 Kuala

Lumpur, Malaysia). M.A.R.T.S. is administered by a committee but since there were no committee members in Penang, Malcolm Westwood 9M2MW was asked to organise the three day long event. His huge task of selecting a venue, organising technical and social functions and banquets, selecting sightseeing, accommodation and transport facilities, arranging audiovisual displays, and organising prizes, entertainment, awards and gifts to delegates was made much easier by his efficient organising committee which included two Australians: Peter Ormerod 9M2PW and Bill Taylor 9M2TW. (Both are RAAF members who will be returning to VK land in early 1985).

Delegates from 10 countries assemble in the sea-facing garden of the E. & O. Hotel for a souvenir SEANET picture.

One of the more difficult aspects in organising a convention is finding a suitable venue. In the case of an amateur convention this is compounded because of the need to erect antennas. The 100 year old E. & O. Hotel, one of the classic hotels of Asia, was chosen because of its commitment to a standard of personalised service (which delegates obviously appreciated) as well as the willingness of the management in permitting a triband antenna system to be located in the tranquil sea-facing garden. The 40W PEP satellite station was a highlight for many amateurs.

Presently there are only 6 or 7 OSCAR-equipped stations in the South East Asia region. The station was on the air for the entire convention giving many stations (mostly European and a few Australian) their first Malaysian contact with the callsign 9MO-SEA. The call was also used on HF with a separate equipment setup. Prefix hunters were out in full force and the pile ups so great that on-the-air sessions were manned by an experienced operator as well as a QSL dispatcher.

The only time the two SEANET stations were not active was during official functions. These began with the arrival of the Hon Datuk Khor Gark Kim, the Deputy Chief Minister of Penang. Another important guest at the opening function was David Ishak, Director-General of Telecoms Malaysia, representing the licensing body of radio amateurs for the country.

Official functions were kept to a minimum, as were other formal gatherings. There was a SEANET symposium and three technical presentations, however:

- **Digital Communications:** Benito Granato, Director of Operations, Marconi Italiana. His company is currently installing digital communications equipment throughout Malaysia.
- **Principles of OSCAR 10:** Peter 9M2PW/VK3CCO.
- **AMTOR Mailbox:** Gordon VK2AGE. This amateur microprocessor teletype over radio system is slowly gaining in popularity in Asia.

Despite the prominence of Australians making presentations there were only 10 delegates from VK land:

- VK2AGE and XYL
- VK5CT and XYL
- VK5JF and XYL
- VK5PZ
- VK3LC
- VK3CCT
- VK2ATJ

In total, 10 different countries and three different continents were represented although a budding ham, N.U. Patel, came from Nairobi (via Johore Baru):

- 35 from Malaysia
- 15 Japan
- 10 Australia
- 8 Indonesia
- 6 Singapore
- 5 Philippines
- 4 Thailand
- 3 USA
- 2 India
- 1 Brunei



All of these countries plus a number of others check into the daily operated SEANET, 14.320 MHz, 1200 Zulu or 2200 EST. SEANET has no permanent Secretariat so the devoted net controllers work out a schedule among themselves to run the net. It is through the controllers that the net has been useful in many areas such as passing the DX news, handling emergency and medical traffic and assigning frequencies for stations wishing to work each other, although SEANET is not a DX net.

Members of the 20 year old network can take credit for many actual life saving communications activities such as answering distress calls from yachts and handling traffic for special medicines.

While these activities are part of the Net's history, discussion of such dramatic events were kept to a minimum during the social gatherings. Many delegates feel that the in-

formal sessions were the most enjoyable aspects of the convention as they allowed time to discuss the latest technology, swap QSLs or renew friendships, some of which began in the early days of the SEANET. Such times gave me an opportunity to learn about the latest amateur developments on a first hand basis.

Brunei: Hassan V85HG

Although amateur activities have been authorised in Brunei for a number of years, the Brunei Amateur Radio Transmitting Society will only celebrate its second anniversary in 1985. BARTS meets every two months but meetings are not very crowded as there are only 12 hams in the whole of this newly independent country (8 or these are ex-pats from England, the USA, etc.)

BARTS membership is B\$30 (about A\$15) which assists with social functions



and participation in the Scout Jamboree. One other area of interest to BARTS is the establishment of a repeater.

The Brunei Government "doesn't know much about amateur radio" but the Department of Telecommunications is interested in the hobby. Only one license grade (General Class) is available. Tests are given in June and December based on the City and Guild Exam (a London Syllabus). BARTS hopes to prepare its own general class exam as well as start a novice class.

Indonesia: Langga YB0BZZ

Amateur radio is booming in Indonesia where there were some 43,000 hams at the end of December, 1984. This figure included 1700 who passed the October exam given in Jakarta. Despite the high numbers of newcomers there is an equally high number of dropouts which is estimated at about 20 per cent.

Kenzi, JA4ENK — who flew to Malaysia specifically for the SEANET Convention — and Mak, 9M2MI (JFIVJW) were particularly sought by JAs wanting the rare 9MOSEA call.

Until further notice no new exams are to be given and no new licences are to be issued in Indonesia. A total redraft of the rules and regulations is expected in January or February which among other areas should contain powers to sweep the large number of pirate stations from the air. (Many of these are found on 2M FM equipment to aid police and fire brigades in communication activities. Some of the traffic was simplex while other traffic went through Jakarta's five repeaters.

Malaysia: Devi 9M2DD

Malaysian hams were justifiably proud at the Penang get together. Not only did their country host the SEANET Convention but

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the newly elected King of Malaysia is a ham. It's too early to know how the former Sultan of Johore, 9M1 (known on the air as Malaysia One) will act to increase amateur activity in the country, but it is hoped that he will assist with a lowering of the 45 per cent electronics duty, 10 per cent customs duty and five per cent sales tax.

There are about 190 hams in Malaysia. A substantial number of these belong to the national body, the Malaysia Amateur Radio Transmitting Society. Two repeaters are on the air: 147.00/147.900 in Kuala Lumpur and the new machine in Penang 147.350/147.950. (The latter repeater is on top of 800m high Penang Hill.)

Philippines: Tony DU10D

About 3000 hams are spread over the 7,107 islands which make up the Republic of the Philippines. Because of this dispersion, administration of the hobby has been a difficult task. This situation is set to change in 1985 with a total restructure of the Philippine Amateur Radio Association aimed to 'pyramid' ham radio with a further development of local, regional and national administrative levels. Despite a difficult economic situation in the country, such a move is expected to bolster the growth of the hobby in the Philippines.

About 150 hams and spouses from many provinces celebrated the 52nd anniversary of the Philippine Amateur Radio Association (P.A.R.A.) in Manila in late November. A full day of meetings was highlighted with a dinner at the Quezon City Sports Centre.

Many of the Philippines' 23 provinces

have a P.A.R.A. affiliated club. Membership in P.A.R.A. is pegged at about A\$6 which provides information service and social activities. A monthly newsletter is due to be reintroduced in 1985. Information needs are currently catered for by a monthly magazine entitled "Ham Radio World". P.A.R.A. has a meeting on the air and news broadcast on the first Sunday of the month on 7045 MHz at 1900 (local time).

Singapore: Ebbey 9VIQG

Despite the affluence of Singapore (the second highest per capita income in Asia after Japan) there are relatively few (40) hams on the 28 mile by 15 mile island. Telecoms, the licensing body is very strict about the hobby with tight controls on operation and licensing.

The licensing officials are very concerned about preventing interference on this hi-tech packed island which is alive with data transmission centres. Other deterrents to the hobby are the high rise flats which prevent efficient antenna arrays and the wide range of cultural, social and money-making opportunities available in Singapore.

The only change planned for ham activity in 1985 is a slight expansion of spot frequencies in the 2M band. It is anticipated that five channels will be available for 2M communications instead of the single spot frequency.

Thailand: Eddy HSIALP

Even though there are more than 800 hams in Thailand (about 800 VHF equipped stations and roughly 10 HF equipped sta-

tions) HS is a prefix heard only at contest time.

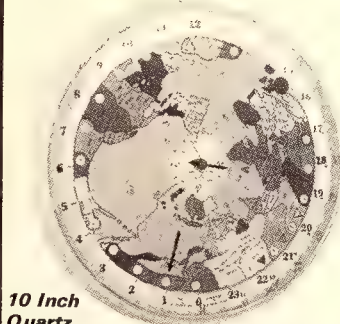
This is because only two types of amateur radio activity are currently allowed:

- **Contest operation.** Only HSOA is allowed on air. Application for such operation must be made two months in advance (although in recent months approval time has been shortened to 2-3 weeks). Authorisation is for a week but a list of all operators must be given to the licensing authorities.

- **VHF operation.** Thailand currently allows limited VHF operation on several spot frequencies in the 144 to 146 MHz band. Called Volunteer Radio Operators, those holding Thai nationality who have demonstrated their technical capability to the Post and Telegraph Department are issued with a VR callsign. When they wish to make a contact they call a control monitor operator who issues them with a spot frequency. This incredibly awkward procedure must be followed each and every time a 2M contact is made. (Obviously, there are no repeaters in Thailand).

This entire situation may well change with Thailand entering the 20th century if a pledge that Communications Minister Samak Sundaravej made is honoured. The minister was the chief guest at the mid November 20th anniversary party of the Radio Amateur Society of Thailand. It was his first personal contact with the society and only at this gala evening did he learn about the worldwide activities and achievements of amateur radio operators. The Thai Radio

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Communications Act 2498 has a provision for amateur radio so the Minister was highly surprised to learn that amateur operations are not fully legalised in the country.

RAST meets the first Sunday of the month at the Singha Beer house for a B/B (beer brunch!) The nearly full day event is supported by about 50-60 members/guests. Quite a number of VKs have organised their Thai holidays around the first Sunday so they can also be part of these activities. B/B enquiries and details of the latest HS developments can be obtained from P.O. Box 2008, Bangkok or by contacting Tony Waltham of the Bangkok Post on 233 8030.

India: Bharathi VU2RBI

Although India is not one of the six South East (ASEAN) countries, I've included it in this look at new ham developments for several reasons. Two hams from India, VU2RBI, Bharathi and VU2RM, Rao, stimulated the SEANET functions because of their enthusiasm and obvious interest in ham radio. Their visit, made possible through the assistance of India's new National Institute of Amateur Radio (subject of a separate illustrated feature later in 1985), was to learn as much as possible about the organisation of amateur radio in the ASEAN countries. Stunning VU2RBI is the Assistant Director of the blossoming Institute.

The Institute, which has already received financial and technical help from both the State (Andra Pradesh) and Federal Governments, is expected to be patterned after the ARRL and JARL, offering such facilities as an extensive testing and development lab and a

publications unit producing study aids. One goal is an amateur radio correspondence course while another is the development of a home brew transceiver kit.

One of the biggest problems facing VUs is the lack of expensive equipment. Australian amateurs may have good used equipment which they might like to make available at reasonable prices to fellow hams in India. Amateurs should send a description and condition report of gear available (plus price and freight charges) to:

**Miss R. Bharathi VU2RBI,
Assistant Director,
National Institute of Amateur Radio,
5-B, P.S. Nagar,
Hyderabad, INDIA 500 457**

There are currently just over 2,500 hams in India with the number expected to grow rapidly partly due to an India-wide newspaper publicity campaign organised through the NAIR and partly from the efforts of India's new Prime Minister, VU2RG, Rajiv Gandhi. It's not known what efforts Rajiv will make in 1985 to boost the hobby although a number of new developments are expected. It is anticipated that the first authorised repeaters will be on the air later this year and it is hoped that the DX expedition to the Andaman Islands will take place in December, 1985.

One area is not certain and that's satellite operation. This is of particular interest to Rao who was the first VU to operate OSCAR. His home brew satellite station set up contacted a number of other OSCAR stations from 1974 until 1983 when the Post and Telecommunications Department decided they

wanted to use 435 MHz. Why they chose that particular part of the UHF spectrum is unknown... it's just one of the many mysteries of India!



One of the most active (and attractive) YLs in Asia is Bharathi, VU2RBI from Hyderabad. She is Asst Director for India's newly created National Institute of Amateur Radio.

Lee 9M2LF (left) and Jaya 9VIVS man the OSCAR 10 SEANET station which worked nearly 20 countries.



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Photos by
Jan Wakulicz VK2CIA

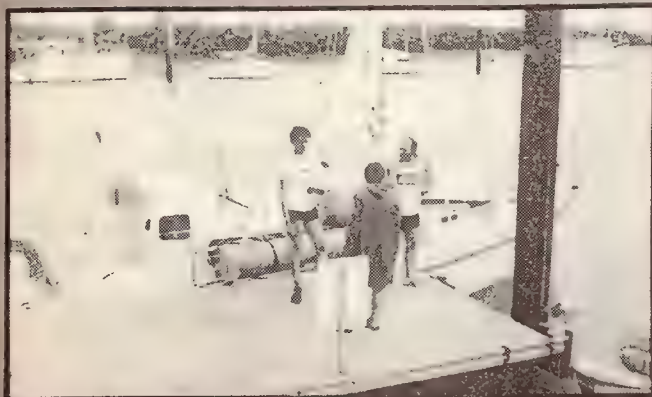
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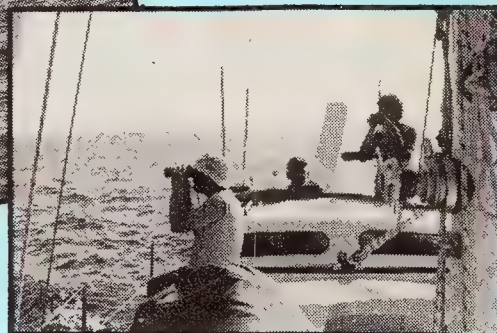


Clockwise from top right: "Spitfire" under sail for the TV cameras as she leaves Gladstone Harbour. Even the Mayor of Gladstone (wearing tie) came to see us off. A Yachtie offers his advice on seasickness to VK3CE & VK5ARO. The skipper has nasty ideas about what to do with that rope. Caltex sends their top man to make sure there's "super" in the fuel drums.

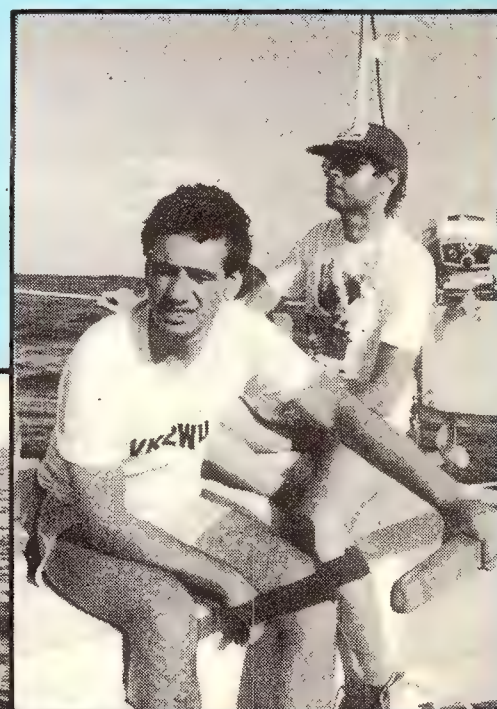


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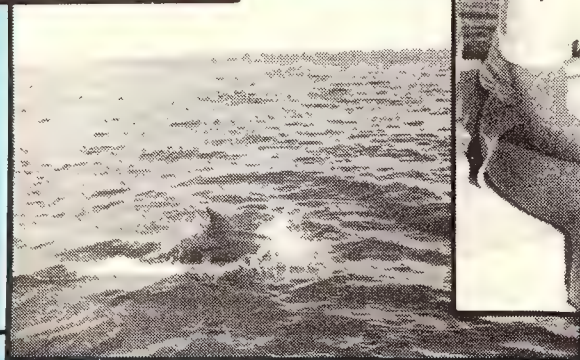
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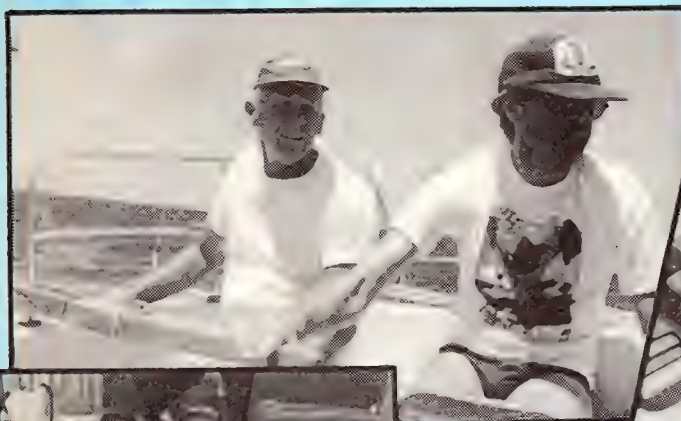


The Journey...



Clockwise from top right: A Channel 7 TV crew from Rockhampton wins an "exclusive". VK5ARO goes beacon spotting as we wend our way through the harbour. A seedy VK2WU tries his hand at the helm while VK3CE watches for ships. This visitor (a dolphin) had his own SHF transceiver built in. Sunrise at sea ... we saw a lot of these! Land! ... but it's Frederick Reef, not Mellish.



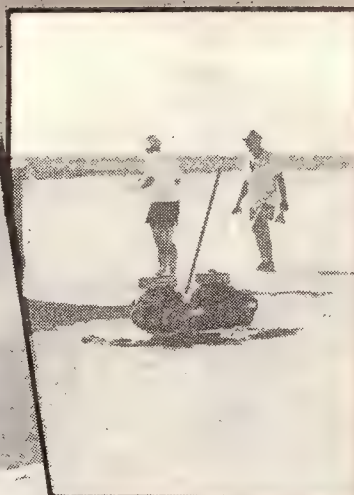


The Island...

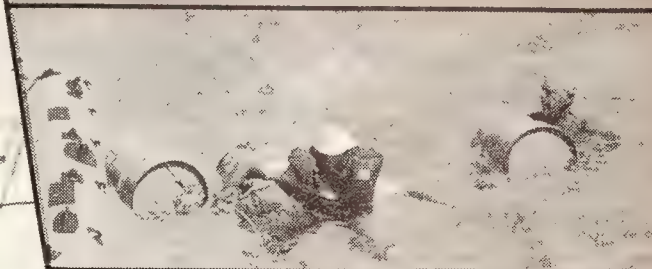


Clockwise from top right: A more confident VK5ARO takes over the helm. Base camp: the Hilton and the Savoy. VK3CE asleep or seasick... who could tell? Awake now, VK3CE takes the helm as the skipper supervises. VK2WU could sleep anywhere, as he proved time and time again.

MELLISH REEF EXPEDITION 1984



The Island...



Clockwise from top left: One beam up, two to go. VK5ARO and the skipper attend to the generators. VK5ARO attends to hygiene, but the camera catches him. One way to get 90 gallons of fuel ashore. And one way to relax afterwards! Building beams is a great way to get a tan. Almost ready to leave, but VK5ARO can't be stopped.



MICROPHONES AND AUDIO QUALITY

"Beautiful speech quality old man, really nice audio!" How many of us have heard or made such comments on air about good clean reception? To be on the receiving end of such comments must be very pleasing if not ego boosting, but I wonder how many of such platitudes are genuinely deserved by our own active efforts to improve the quality of our audio or to ensure that high technical standards of sound are maintained. It may be more often pure luck that "this" particular microphone goes with "that" particular rig, or that a speech processor or the degree of modulation has been **accidentally** adjusted to obtain good reports.

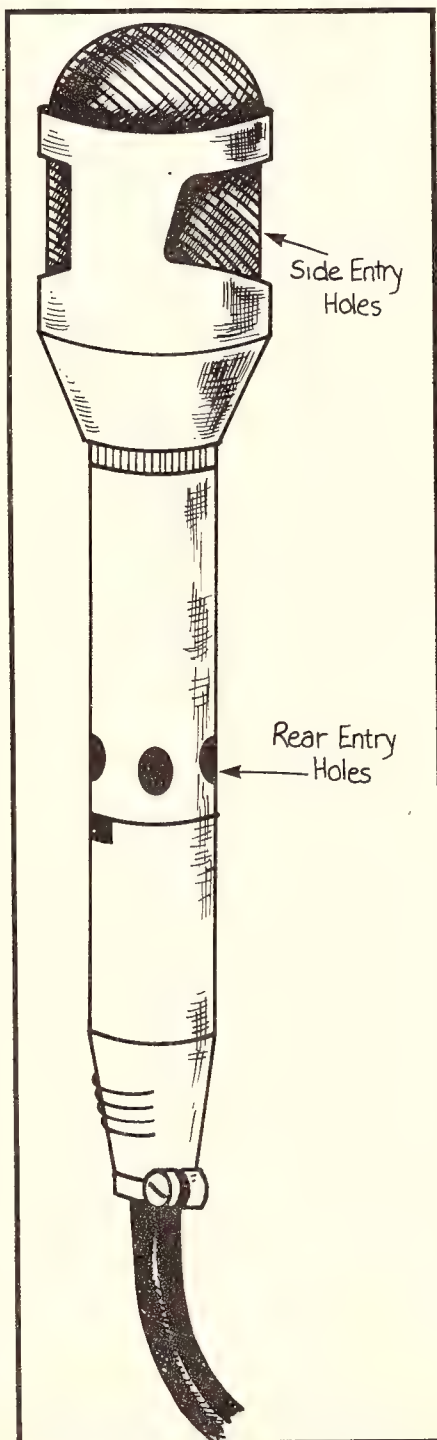
Whilst ineligibility may be the major criterion of phone communication, how much more pleasant it is, especially on the FM bands or on local QSOs, to be able to hear all those nuances and characteristics of our contact's voice without distortion. This is not to imply that flat frequency response from 30Hz to 16kHz at 0.01% distortion is required, but rather than a well balanced, uncompressed, and relatively undistorted speech quality can be most pleasing to the listener in appropriate situations and elicit the types of comments that make us feel proud of our equipment.

Good speech quality does not begin at the microphone. It begins with the speaker him-/herself. Good enunciation is essential among radio communicators. Learn to open your mouth — form each word clearly — do not run words together (as in the proverbial "didyeravagoodweekend?"). In other words, avoid lazy speech habits.

Speaking too closely to the microphone is just as bad as speaking too far away.

Close speaking can cause "popping" of Ps. That is, sounds with an explosive expiration such as Ps and Bs can cause the diaphragm of the microphone to be deflected far beyond its normal limits causing excessive and distorted output signals. This effect can also occur on Ss and Hs where the expired air forces the diaphragm beyond its normal limits. Solutions here are to: 1. Hold the microphone at least 8cm from the mouth. 2. Speak across the face of the microphone rather than into it. 3. Use a "wind shield". (A small moulded piece of foam plastic is ideal).

Speaking at too great a distance from the microphone introduces the acoustic characteristics of the room into the speech. These characteristics may be acoustic resonan-



By Ken Bull (VK3NJ)

ces, reverberation, or background noises. Acoustic resonances are caused by standing waves set up between parallel walls, or between floor and ceiling and are often a problem in a small room. Some frequencies become emphasised whilst others may cancel out. The effect can make speech sound very boomy or boxy.

Reverberation is defined as a combination of echos due to reflections from the various surfaces within the room. Reverberation **Time** is the time it takes for the initiating sound to fall by 60dB due to this reverberation. Long reverberation times can be very annoying and decidedly reduce the intelligibility of speech. Reverberation can be reduced by having much sound absorbing material in the room — rugs, carpet, drapes, etc.

Reverberation and the effects of resonances are always present to some degree. When we speak closely to the microphone, the ratio of direct sound to the reverberation is very high and the reverberation may be 40dB or more down. As we move further from the microphone, the amplitude of the direct sound falls off as the square of the distance. To compensate, we wind up the gain of the speech amplifier. This of course increases the level of the reverberation and other miscellaneous noises in the room relative to the direct speech and we may have a problem. A small amount of reverberation may enhance the quality of our transmission, but too much is dreadful. The best balance can be judged by experimentation and relying on reports from our contacts. Better still, make a recording of the output of the speech amplifier for different microphone to mouth distances and play it back in a quiet location. This recording technique is recommended if a variety of microphones is available so that the most suitable for a particular purpose can be chosen.

Microphones have various properties which may be tested subjectively and without the need for special test equipment. Rather than relying on the reports of others, recording of the tests and later playback and assessment is probably the best method of

Above: A typical unidirectional microphone (referred to in text as Fig 5. Majority of audio input is through front grille.

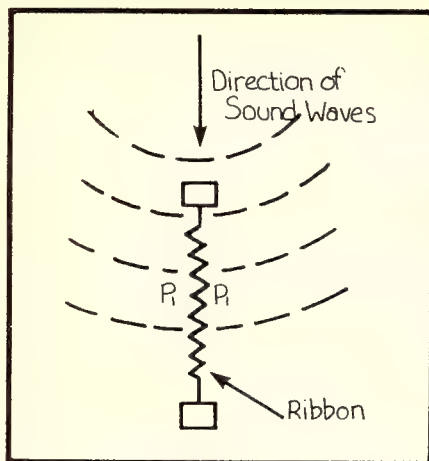


Fig. 1 — showing sound arriving from the side of a ribbon microphone. P1 is the pressure at two points in the sound wave. There is an equal pressure on each side of the ribbon.

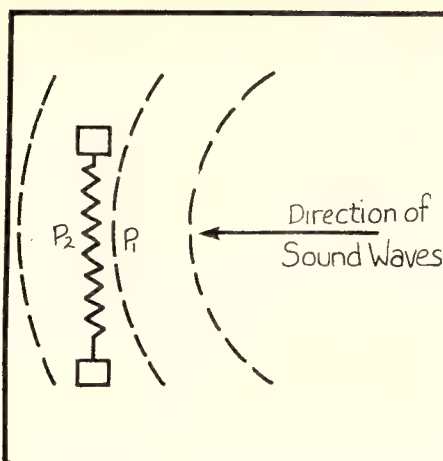


Fig. 2 — sound arriving from the front (or rear) of a ribbon microphone. P1 represents a high pressure region of the sound wave. P2 represents a low pressure region of the sound wave. The ribbon moves from P1 towards P2 at this instant.

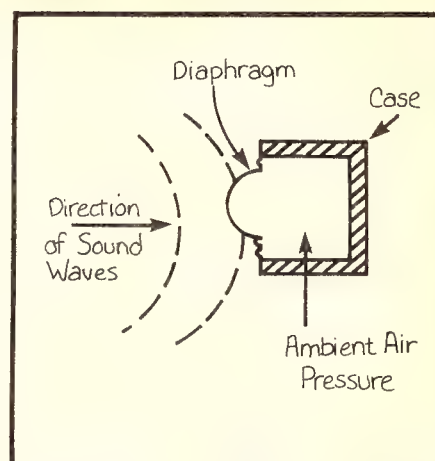


Fig. 3 — sound arriving at the front of a pressure operated microphone causes the diaphragm to move, increasing air pressure.

determining results. The characteristics of the speech amplifier (and processor if used) will modify the microphone's own qualities so it is important to record the output of the audio circuitry of the transmitter. If it is not possible to get at the output of the speech amp, it may be necessary to obtain the services of a friend to record your transmission, or use a monitor receiver. The characteristics of the receiver will also modify the results, but this should give a more realistic assessment since it will typify the real situation.

The microphone characteristics we should check are:

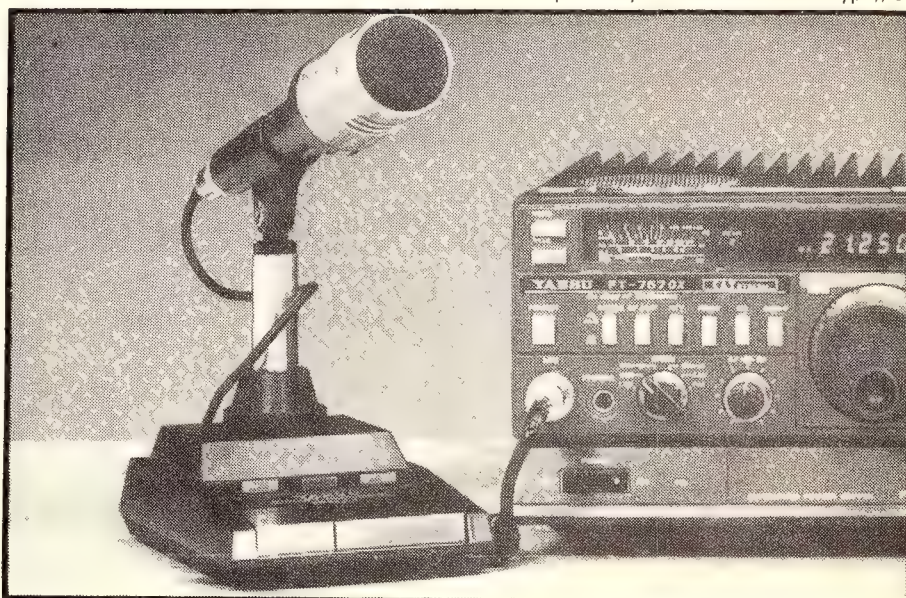
1. **Frequency Response.** This is something which can be altered by changes to the speech amplifier or by means of an add-on speech processor or pre-amplifier. More about this later, but the smoother the frequency response of the microphone, the easier it will be to control it in subsequent circuitry.
2. **Sensitivity.** This is sometimes misinterpreted to mean the ability of the microphone to give the output — or **not** to give an output — for a given acoustic input i.e. It is assumed that low level sounds do not cause the diaphragm to move, which is not correct. In fact it means the voltage out of the microphone for a quoted acoustic input. Low sensitivity can be compensated for by winding up the gain of the speech amplifier or by the addition of a preamplifier.
3. **Signal to Noise Ratio.** The only type of microphone likely to be a problem with internally generated noise is the carbon microphone, such as is used in a telephone. These should not normally be used for radio communication, not only because of the frying noise they generate, but also because of their high distortion. Low sensitivity microphones may highlight noise problems in speech amplifiers since these must be given higher gain to provide sufficient output. Induction from nearby sources of interfering fields can also be a problem, especially with high impedance microphones. Low impedance

units are desirable because of their ability to be less susceptible to r.f. pickup in the shack, but they usually have a low output voltage. The general run of the mill dynamic microphones provided for use with ham rigs are of the medium impedance type, providing a compromise between output voltage and impedance.

4. **Polar Response.** This represents the sensitivity of the microphone to sound emanating from various directions. It is usually shown as a polar graph plot, similar to an antenna polar diagram. It represents one microphone characteristic which cannot be altered easily and depends on the design of the microphone. For instance, a ribbon microphone, whilst not generally used for communication purposes, normally has a bi-directional response. This is because the impinging sound waves generally have access to

both surfaces of the ribbon, which itself is mounted in a strong magnetic field for the signal generation. Sound waves arriving parallel to the ribbon (see fig 1) have equal pressure on both surfaces and the ribbon does not move. Sound arriving at right angles to the ribbon (fig 2) produces a higher pressure on one surface than the other and the ribbon moves towards the direction of lower pressure, cutting the magnetic flux and inducing an output voltage. Thus the ribbon microphone responds to sound from the front or back, but not from the sides.

Most microphones used for communication are of the pressure operated variety. In these microphones the front of the diaphragm is open to the sound, whilst the rear of the diaphragm is enclosed. This system may be used in dynamic microphones (moving coil — probably the most common type), or



Above: The Yaesu MD-1 dynamic desk microphone — typical of the modern scanning type microphone, it can be improved.

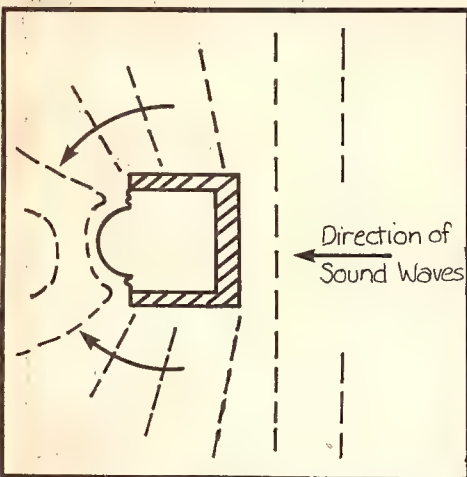


Fig. 4 — sound arriving from the rear of a pressure operated microphone is diffracted around the case.



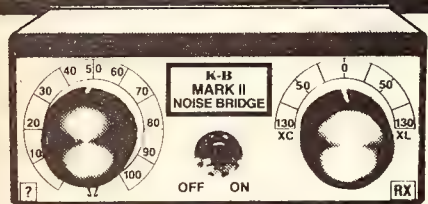
Above: The Kenwood MC-50 desk microphone — probably one of the most common in amateur shacks, but not necessarily perfect.

the electret (variable capacitance type) which is appearing more often these days. Pressure operation may also be used with crystal (ceramic) or ribbon microphones but these two are seldom used in communication applications.

A pressure microphone operates on the principle that the rear of the diaphragm is subject to a fixed ambient air pressure. As the sound wave approaches the front of the diaphragm, a difference in pressure will now exist between the front and the rear of the

diaphragm which now moves in the direction of the lesser pressure, generating its output voltage in the appropriate way. Sound from the rear of a pressure operated microphone will be diffracted around the case and thus arrive at the front of the diaphragm just as sound from the front did. Thus the microphone will respond to sound from the rear, and obviously, in a like manner to sound

from the side. Therefore the polar response of this microphone will be omni-directional (figs 3 & 4). Higher audio frequencies arriving from the rear will not be diffracted around the case as easily as lower frequencies, since the case represents a larger obstacle to the shorter wavelengths, so the microphone is usually less sensitive to high frequencies from the rear.



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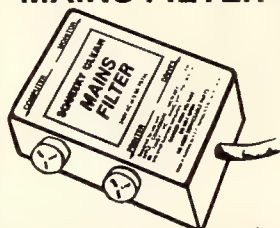
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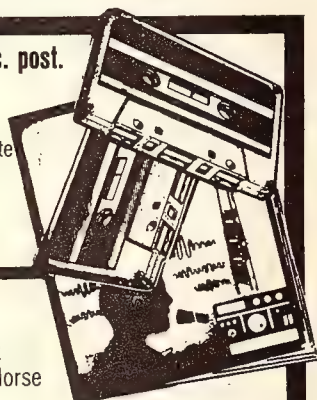
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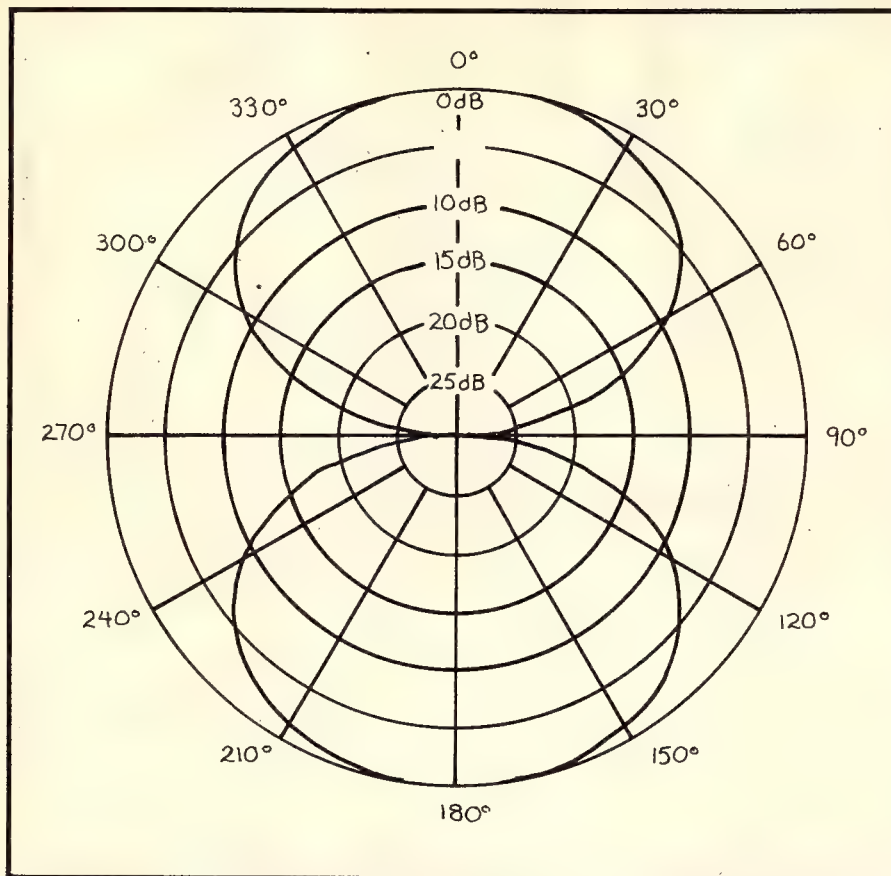
Suits Apple® Victoria and APII Computers. A full range of Accessories, Peripherals and Plug-in Cards are available on request. Please write for complete list.

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Cardioid or uni-directional microphones respond to sound from one direction only and should be preferred for communication use, however they are generally more expensive than omni-directional types. There are various methods of obtaining uni-directional response, depending on the type of microphone. For instance, a capacitor or electret microphone may incorporate two capsules polarised and/or connected in such a phase relationship so as to cancel sound approaching from the rear. Dynamic microphones may have a long case within which are appropriately shaped and sized sound chambers which create phase cancellations for sound arriving from the rear and side. Alternatively, a large flat baffle plate surrounding the diaphragm will reduce the diffraction of sound from the rear and thus produce a reasonable unidirectional characteristic. A unidirectional microphone will of course reduce reverberant and reflected sound entering from the rear and thus improve the ratio between the direct sound and the reverberation.

If the directivity properties of your microphone are not known, it may be an interesting experiment to test its polar response

Fig. 5 — The bi-directional (figure-8) polar pattern. This is seen with a bi-directional microphone.



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1. All aluminium lattice towers (guyed). The approval of the Department of Labour and Industry is expected in the near future. The computations have been done by a chartered engineering consultant.
WIDTHS 175, 250, 380, 450 mm
MAX Hgt 25, 40, 60, 75 metres
WEIGHTS 1.0, 1.5, 2.4, 3.5 kg/metre
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2. Tilt over and crank up towers . . . Early 1985.
3. Parabolic dishes at affordable prices 2, 3, 4, 5 & 6 metre diameters . . . February 85.
4. 1, 2, 3, 4, & 5 element high gain beams using lattice tower for booms on 40 metres. Don't miss out on that fine DX . . . October 1984.
5. 1, 2, 3 & 4 elements on 80 metres!!! . . . December 1984
6. Log-periodics from 3.5 MHz and up . . . January 1985 13 MHz and up available now
7. Range of highest quality BALUNS to 5 kW. 1:1, 4:1 for dipoles, inverted vees etc
8. On special order, we can design and supply RHOMBIC ANTENNAS including towers, guys, wire, porcelain insulators, terminating non-inductive resistors etc. etc. DEBGLASS Fibreglass guys 4 and 5 mm dia. 20% stronger than steel cable!!

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by speaking at the microphone from differing directions, identifying the direction as you go. e.g. "I am speaking 8cm from the front of the microphone" etc . . . The drop in level, on subsequent playback, as the microphone is rotated, will indicate its polar response. A more scientific approach could be made using an audio oscillator feeding a loudspeaker and observing the playback results on a dB meter.

5. **Distortion.** Carbon microphones are the only ones likely to have inherently high distortion, however it is possible for delicate or super-sensitive microphones to suffer from overload problems when used for close speaking. In practice though, any overload distortion problems are most likely to occur due to over driving the speech amplifier. This fact may be determined and pinpointed using a CRO.

6. **Acoustic Quality.** Some microphones, because of the flimsy nature of their construction, may vibrate at particular frequencies, giving a "tinny" or "rattly" sound.

Alternatively, chamber resonance may occur giving a "boxy" quality to the sound. All of these effects may show up to some extent on the frequency response characteristic, but being an acoustic problem, will be impossible to equalise out in the following amplifier. In addition, some microphones are very sensitive to handling, giving strange squeaking noises when the hand is moved on the case or the "On" button is pressed.

The Speech Amplifier

Most speech amplifiers have a frequency response which is reasonably flat between about 200Hz and 4kHz with a more rapidly falling response at the high end than at the low end of the audio band. The fairly sharp cut-off at the high end is to both reduce the possibility of r.f. feedback and to limit the transmitted bandwidth. Apart from the possibility of overdriving the early audio stages, distortion is likely to be low.

It is not the purpose of this article to cover the method of setting modulation depth, but rather to highlight the poor effects of overmodulation on received speech quality, not to mention the wide bandwidth of spurious harmonics generated much to the annoyance of users of nearby frequencies. In short, make sure that you do not overmodulate.

The claims of speech processors vary from useless to ridiculous. Over the years we have seen various types — audio compressors, audio clippers, r.f. compressors, long delay,

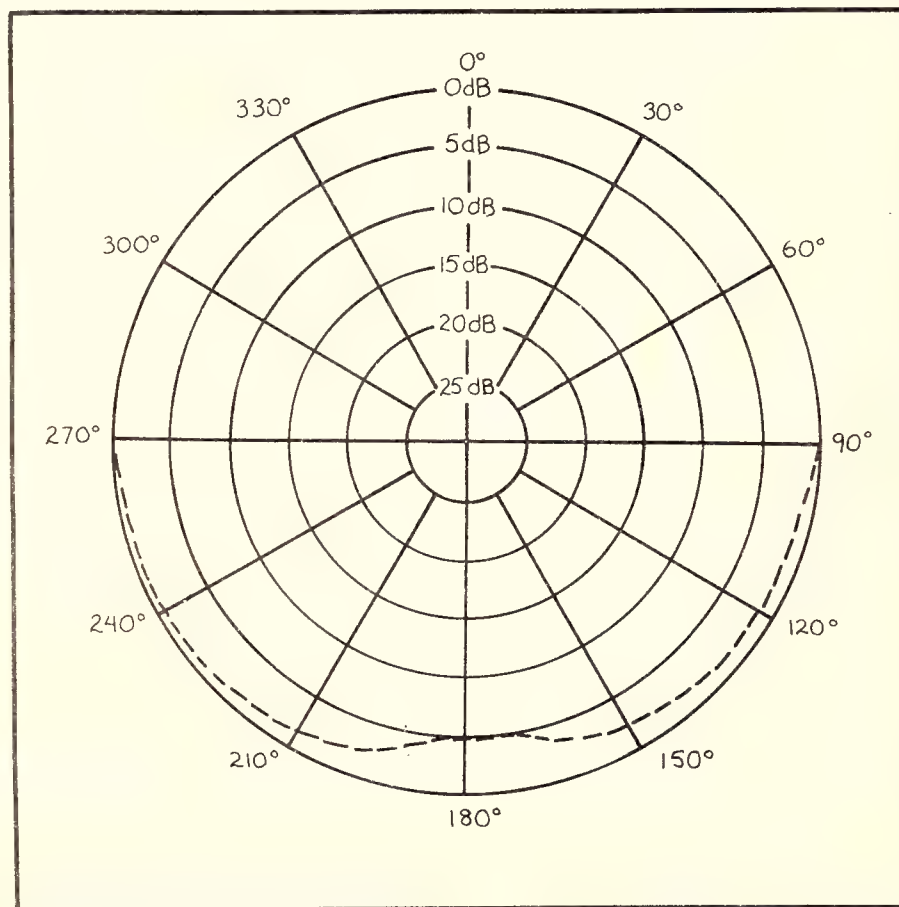
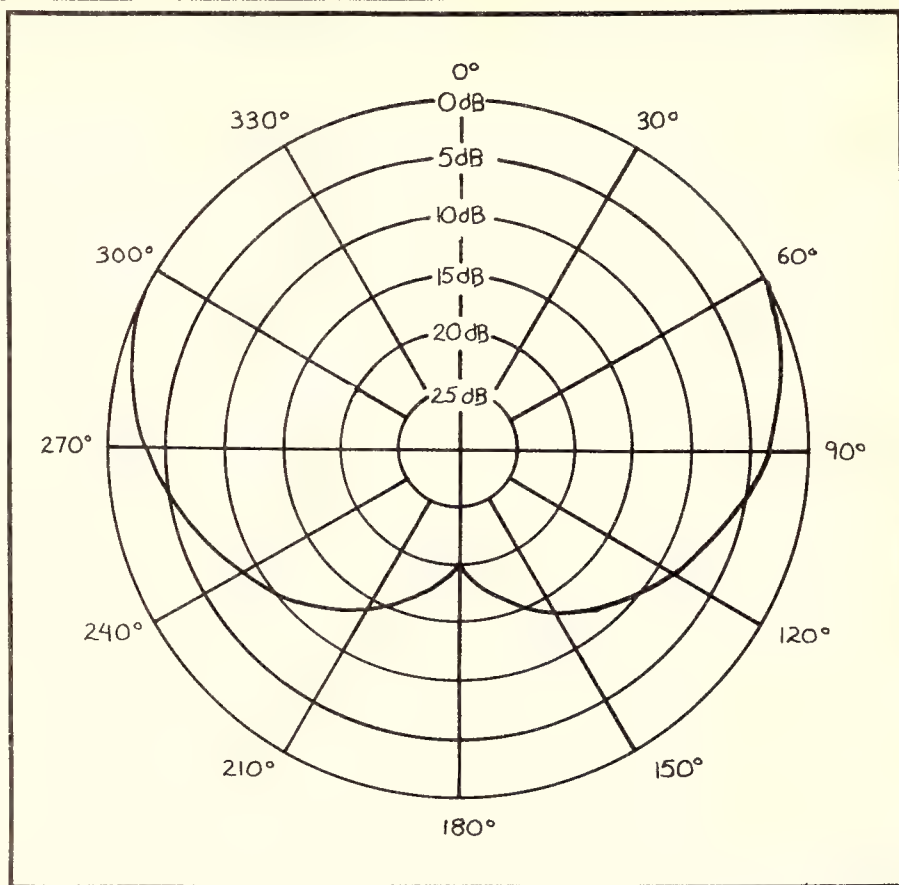


Fig. 6 — The uni-directional microphone produces a uni-directional or cardioid polar pattern.

Fig. 7 — An omni-directional microphone polar pattern — the dashed line indicates a slight loss of sensitivity in the rear.

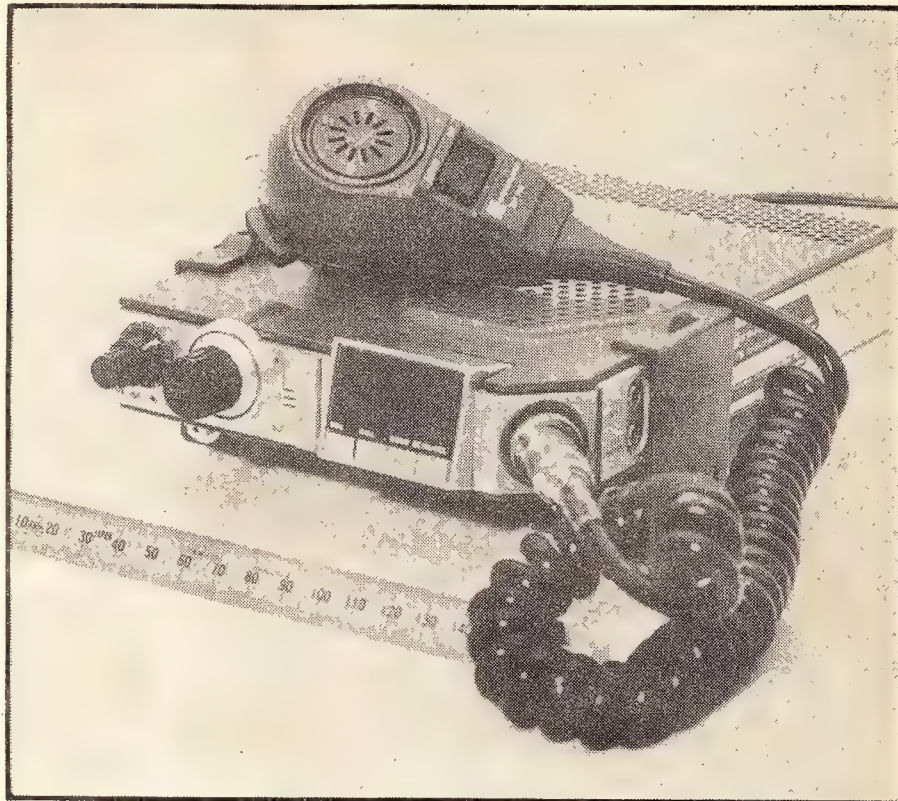
short delay, etc . . . The aim of most seem to be to get the best S signal report consistent with minimum distortion. There can be no argument that they all cause distortion, no matter how inoffensive this distortion may sound. The author has experimented with a home built audio compressor/limiter used in conjunction with an FT 101, and come to the following conclusions:

1. The use of compression **did** improve the received signal level as measured on the S meter, but background noise and reverberation between words was objectionable. (This is due to the audio gain of the compressor winding up in the absence of voice input).
2. The use of heavy clipping (without compression) gave a small but probably worthwhile increase in received S reading, but produced an objectionable degree of distortion which actually decreased intelligibility.
3. The use of light clipping alone gave only the slightest of S level increase but kept the audio quality clean.

Test 3 was opted for and the compression part of the circuit was disabled. Further tests showed that an audio response which peaked up at about 4kHz, and then fell away rapidly gave a great increase in intelligibility, although this was not noticeable on the S meter. This response was built into the final processor which is still consistently used on the h.f. bands.

The easiest way of obtaining this rising response is to reduce the value of the coupling capacitors in the speech amplifier. This of course merely lowers the low frequency response, but winding up the audio gain then achieves close to the desired result. Since the high frequency components of speech are usually small in amplitude, over-modulation in the 2 to 4 kHz region is normally not a problem. A more enterprising experimenter may try using an audio resonant circuit (perhaps using an op amp as a gyrator) in order to limit the boost to between 3 to 4 kHz which should give the best results.

As far as microphones are concerned, the author uses a low impedance good quality



Above: As transceivers become more compact, the standard hand microphones also become smaller, with resultant loss on audio quality — but these deficiencies can be cured.

moving coil type with an (unfortunately) omni-direction response. The microphone itself has a flat frequency response from about 30 Hz to 10 kHz which is modified by the outboard speech processor and the speech amplifier of the FT 101. Speaking distance is usually maintained at about 8 to 12 cm.

In summary, to improve the audio quality of your transmission:

1. Enunciate clearly. Speak at an optimum distance from the microphone.

2. Use a good quality microphone, preferably uni-directional.
3. Ensure that the acoustics of your shack are pleasant.
4. Ensure that the speech amplifier and/or processor is free from distortion and overload.
5. Do not overmodulate.
6. Some improvement in intelligibility may be obtainable by boosting the response of your audio by a few dB between 3 and 4 kHz.



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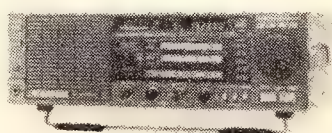
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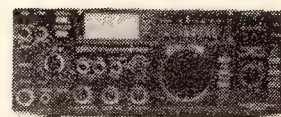
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CRYPTIC

HAM WORD

CLUES ACROSS

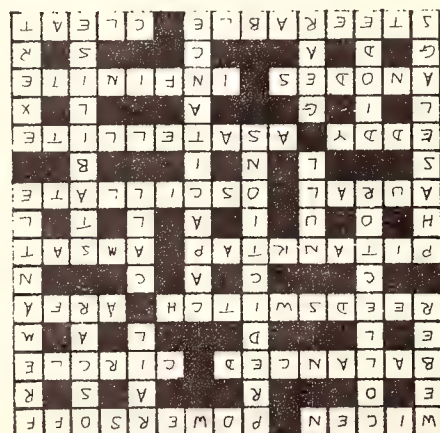
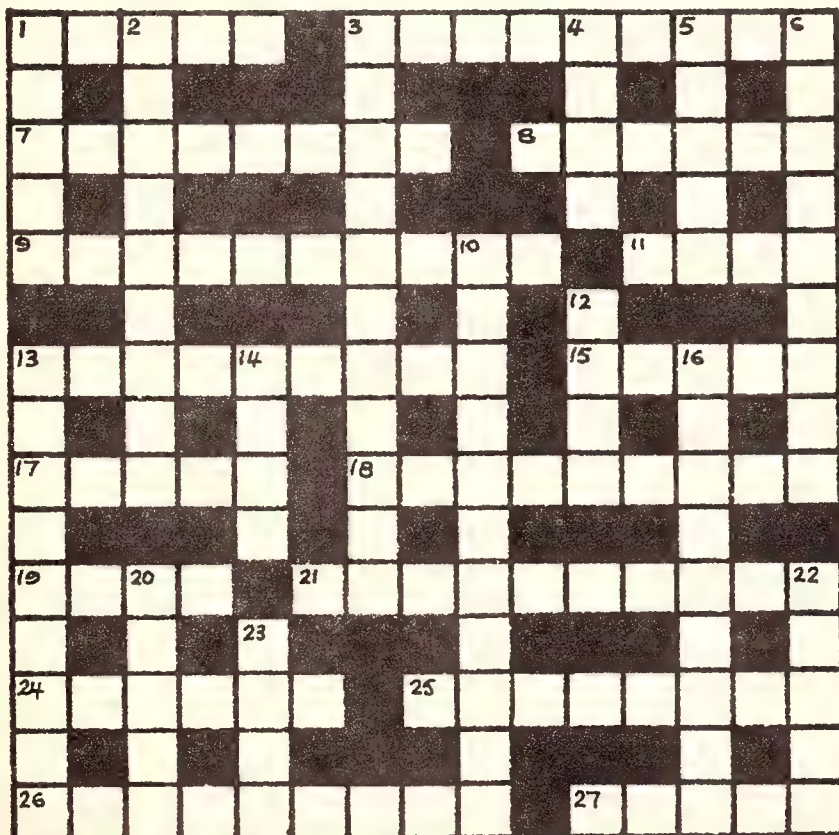
1. Emergency net twice nominated. (5)
3. Black out disconnects from mains. (6,3)
7. Bad Lance upset lace band with tales of this twin feeder characteristic. (8)
8. Cleric makes great signal path. (6)
9. Circuit interrupter an amateur can make from unravelled D.C. E.H.T. wires. (4,6)
11. Voltage symbol in Amateur Radio Action region. (4)
13. Pink Pat at breakdown of device to alter loading on transmitter output valve. (2,4,3)
15. On the morning of the sixth day there

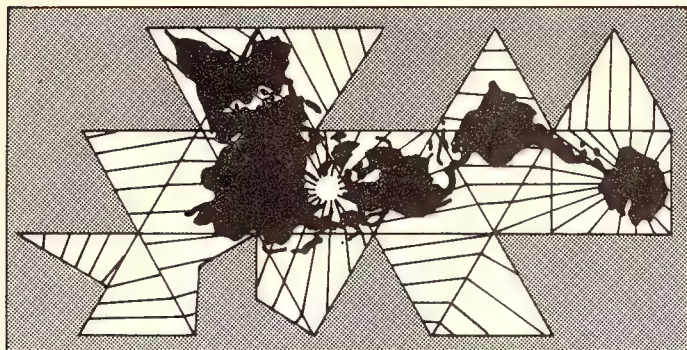
was an amateur satellite company. (5)

17. Gold, queen, aluminium. Is it a trick of the ear? (5)
18. Vibrate slate coil. (9)
19. Dyed coil core current. (4)
21. In ARA, S.A. tell I terminated QSO via an artificial moon. (1,9)
24. Get those plates out of the piano, Desmond! (6)
25. I feint in unimaginably big number. (8)
26. Aim all before the French. Beam can be pointed. (9)
27. A hundred and fifty devour a long wire attachment. (5)

CLUES DOWN

1. Spider builds the queen unit of magnetic flux. (5)
2. Transistor part found kicking around in cell or cot. (9)
3. Forecasts before Dianna centre taps atoms with electrons missing. (11)
4. Random access to forty nine bus. (4)
5. Circular trace of a burn on an amateur satellite. (5)
6. VK6 QTH lent frame. (9)
10. Condenser characteristic keeps sun off head. Alternating current I brown with an anglican. (11)
12. Station identification initiates carrier above legal limit. (4)
13. Gasp! Leash disintegrates as one wave precedes another. (5,4)
14. Nothing can lop head off novice under legal limit. (4)
16. Saint Seaman. Forty nine plus one to the south east remove fluctuations. (9)
20. Dianna's poetry allows one way current. (5)
22. Work hard to take legume from expert. (5)
23. Gravity forces aural organ into amateur equipment. (4)





WORK THE WORLD

By Jim Smith P29JS

PO Box 515

Konedobu, Papua New Guinea

Awards Index

It was obvious from a revue of the awards covered in ARA since Issue 1 that Alan VK4SS had covered a great deal of ground. In taking over the job it was necessary to refer to the ARA Cumulative Index (Vol 6, No 13) almost constantly to avoid duplication. Inevitably frustration crept in as the ARA index is in Volume/Issue order, not alphabetical or otherwise, and not conducive to a quick check of whether an award had been featured or not.

As a result, you will see that for this issue I have rehashed the index listing using country-of-origin sequence.

In addition there was a slight hiccup over last issue copy due to a move of QTH. As a result my copy deadline became impossible to meet and Alan VK4SS kindly stepped in to fill in the gap. My apologies — for the time being the column will be written from PNG, where I am back with Civil Aviation for a short spell. I am fortunate to have retained

AUSTRALIA

National	DX Century Club	Vol 1 No 1
	see also	vol 2 No 10
VK1	Worked All VK Call Areas	Vol 2 No 12
	Heard All VK Call Areas	Vol 3 No 1
VK2	VHF Century Club Award	Vol 3 No 2
	ALARA Award	Vol 3 No 1
VK3	ALARA update	Vol 4 No 6
	Australian Capital Award (ACC)	Vol 5 No 4
VK2	The VK1 Award	Vol 3 No 13
	HMAS Canberra Memorial Award	Vol 5 No 3
VK3	Blue Mountains Radio Club Award	Vol 1 No 10
	Welcome Stranger Award	Vol 4 No 13
VK3	Power Valley Award	Vol 3 No 4
	Power Valley VIP Award	Vol 3 No 9
VK3	IYDP Natural History Award	Vol 3 No 12
	Gippsland (Gateway) Award	Vol 6 No 13
VK3	FAMPARC Award	Vol 6 No 2
	Coastal Towns Award	Vol 6 No 2
VK3	Port Philip Bay Award	Vol 6 No 2
	Cape Schank Award	Vol 6 No 2
VK3	Ballarat Gold Rush Award	Vol 6 No 8
	Lake Goldsmith Steam Radio	Vol 6 No 13
VK3	Begonia (Ballarat) Award	Vol 4 No 7
	DX Widows Award	Vol 4 No 3



THE KOREAN AMATEUR RADIO LEAGUE

KOREA DISTRICT NUMBER AWARD

This is Certifies that the Amateur
Radio Station _____ *Operated By* _____ *has*
Submitted proof of contact with (50,100,150)
Korea District Numbers
Date _____ *President* KARL _____
No. _____ *General Secretary* _____

my identity with P29JS, a call I held for almost six years.

In reply to a recent letter to the Korean Amateur Radio League, the Awards Manager kindly sent me details of the awards issued by KARL. The certificates, which are featured in this issue, are attractive, well produced and — an important consideration — need a bit of effort to achieve.

The HL Award (HLA)

This award has five levels or categories:

1. Class K..... 5 contacts
2. Class O..... 10 contacts
3. Class R..... 20 contacts
4. Class E..... 30 contacts
5. Class A..... 50 contacts

The letters used for the five classes thus spell 'KOREA', land of the morning calm. Requirements are a GCR list and 10 IRCs.

The AKA Award

The All Korea Award is issued for working all Korean prefixes and requires seven contacts as follows:

HL1.....	1
HL2.....	1
HL3.....	1
HL4.....	1
HL5.....	1
HL8.....	1
HL0.....	1

Again, a GCR list and 10 IRCs will secure you this award.

VK4

Wildcat Award.....	Vol 4 No 11
Gold Award (Ballarat).....	Vol 4 No 13
Worked All Old Cities & Towns.....	Vol 1 No 3
Worked North Old Award.....	Vol 1 No 8
Black Marlin Award.....	Vol 2 No 5
Worked Rockhampton Award.....	Vol 3 No 5
Pelican Award.....	Vol 4 No 1
Brisbane ARC Award.....	Vol 4 No 2
Brisbane North Radio Club Award.....	Vol 4 No 2
Gold Coast ARS Award.....	Vol 4 No 9
City of Brisbane RS Award.....	Vol 5 No 1
Worked All Shires.....	Vol 5 No 8
Golden City Award.....	Vol 3 No 6
see also.....	Vol 5 No 9
WICEN Certificate of Merit.....	Vol 5 No 5
White Bull Award.....	Vol 4 No 12

VK5

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Ex-G Silver Anniversary Award.....	Vol 6 No 12
Blue Lake (Mt Gambier) Award.....	Vol 3 No 7
Festival Cities Award.....	Vol 3 No 8

VK6

Zone 29 Award.....	Vol 1 No 1
See also.....	Vol 5 No 5

VK7

VK8

VK CW QRPp Club Award.....	Vol 3 No 3
Worked WA State Police Award.....	Vol 1 No 3
Heinaults Reward.....	Vol 5 No 11
Tasmanian Devil Award.....	Vol 3 No 3
Worked VK8 (DDXWG) Award.....	Vol 2 No 9
Outback Australia Award.....	Vol 2 No 12
John Flynn Memorial Award.....	Vol 2 No 13
Bougainvillea Festival Award.....	Vol 3 No 11

AFRICA

Worked All Africa Award.....	Vol 2 No 11
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ALASKA

Alaska Goldpanner Award.....	Vol 6 No 7
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ARGENTINA

Certificado Mendoza.....	Vol 2 No 12
Certificado Antartico Argentino.....	Vol 2 No 10



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101 Paises Award.....	Vol 6 No 11
see also.....	Vol 2 No 10
Cinco Continents Comunicados.....	Vol 6 No 11
Todos Paises America.....	Vol 6 No 11
Certificado Moviles Argentinos.....	Vol 6 No 11
Certificado Argentinos.....	Vol 6 No 11
Republica Argentinos.....	Vol 6 No 11
LU 10 Doble Letres.....	Vol 6 No 11
Toda Republica Argentina.....	Vol 6 No 11

AUSTRIA

Minor States Certificate.....	Vol 2 No 13
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BELGIUM

Benelux Award.....	Vol 2 No 9
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BRAZIL

Electronica Popular Atlantic.....	Vol 3 No 11
Worked All America Award.....	Vol 2 No 5
Diploma Brasileiro de DX.....	Vol 2 No 7
Brazilian YL Award.....	Vol 6 No 11

BULGARIA

PAC/RSD Diploma.....	Vol 5 No 13
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CANADA

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Canadaward.....	Vol 3 No 8
Canada Ski Award.....	Vol 3 No 8
St Lawrence Seaway Award.....	Vol 1 No 10

CHILE

Valparaiso DX Diploma.....	Vol 2 No 9
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COLOMBIA

Worked All HK Zones.....	Vol 1 No 12
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CYPRUS

The Cyprus Award.....	Vol 1 No 8
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CZECHOSLOVAKIA

Czechoslovakia ZMT Award.....	Vol 1 No 4
Diplom P-75-P.....	Vol 3 No 3

DENMARK

Copenhagen Award.....	Vol 2 No 4
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The KDN Award

The Korean District Number award is divided into three categories and the following are required for each:

- (a) 50 Korean District Numbers
- (b) 100 Korean District Numbers
- (c) 150 Korean District Numbers

Send also a GCR list and 10 IRCs. All applications go to:

The Awards Manager
Korean Amateur Radio League
Central Post Box 162
Seoul, Korea

Tasmania Devil Award

The award manager, Bob Richards VK7NAI, has asked that this award be featured again. He promises a copy of the certificate soon and this will be featured in due course. In the meantime, here are the details:

This award is created to interest Australian and overseas amateurs in contacting reasonably rare VK7s. Tasmania, the island state of Australia, has many unique features. The 'Devil' award is named after one of these.

You may qualify for the award in any one of the sections or sub-sections.

Sections

1. MF-HF

- (a) Open — by use of any combination of the bands up to 30 MHz, and modes available to the applicant.
- (b) One Band — of those available.
- (c) One mode — of those available.
- (d) All Novice — contacts with Novice calls.

2. VHF

- (a) Open — by the use of any combination of bands above 30 MHz, and modes available to the applicant.
- (b) One Band — of those available.
- (c) Satellite — contacts via amateur satellites. Cross band to HF allowed if permitted under licence terms.
- (d) Repeater — via in-band repeaters.

Claims

HF applicants must establish two way contact with a number of VK7 amateurs, depending on the applicants location:

Australia (inc VK7)..... 50 contacts
 Oceania, Antarctica..... 30 contacts
 Asia, Nth America..... 20 contacts
 Europe, Sth America..... 10 contacts
 Africa..... 7 contacts

VHF applicants to contact 20 VK7 amateurs with at least one station in each of the three WIA Branch (zone) areas.

Verification

Claim logs, with applicant's call, name, section, to show stations contacted, date, time, band and mode. The claim to be countersigned by two other amateurs and signed by the applicant. Spot checks will be made with stations contacted in VK7 for confirmation. QSLs will not be required.

Contacts made since the first day of January 1978 can be used in the claims.

A fee of 10 IRCs overseas or 5 IRCs within Australia (or equivalent) should accompany the claim to cover the cost of postage and applications should be sent to:

Awards Manager
50 Bayswater Rd
Moonah, Tas 7009

FRANCE

Diplome des Terres Australia	Vol 2 No 8
Diplom d'Excellence	Vol 1 No 5
Diploma des Provinces	Vol 1 No 10
Diploma des Departements	Vol 6 No 1
Diploma des Provinces de France	Vol 6 No 1
Diplome d L'Univers	Vol 6 No 1
Diplome Telegraphie Classe C	Vol 6 No 1
Diplome des Depts et Territories	Vol 6 No 1
Diplome des Coutes Experimentales	Vol 6 No 1
Diplome des YLs de France	Vol 6 No 1

FINLAND

The OH Award	Vol 2 No 4
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EU-Prefix Award	Vol 2 No 5
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Worked German Large Cities	Vol 4 No 2
Familia Award	Vol 5 No 13
WAE Award	Vol 1 No 9
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International Airports Award	Vol 4 No 4
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Iron and Steel Diploma	Vol 6 No 12
DFSA Diploma	Vol 6 No 12

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HOLLAND

Dutch DXC Certificate	Vol 2 No 3
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HONG KONG

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Catch 22 Award	Vol 5 No 3

HUNGARY

The Budapest Award	Vol 2 No 6
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INDIA

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Worked Republic of India	Vol 1 No 13

IRELAND

Cork Radio Club Award	Vol 5 No 4
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ISRAEL

IARC 4 x 4 = 16 Award	Vol 1 No 7
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Japan Century Guns	Vol 2 No 10
Heard All Continents	Vol 2 No 10
Worked All Cities	Vol 2 No 10
Heard All Cities	Vol 2 No 10
Worked All Guns	Vol 2 No 10
Heard All Guns	Vol 2 No 10
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SSP Worked All Asia Award	Vol 2 No 2
The Samurai Award	Vol 2 No 2
Flying Hams Club Award	Vol 6 No 7

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Gdynia Award.....	Vol 6 No 13
Worked SP Award.....	Vol 6 No 13
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CLUB DIRECTORY

NATIONAL

AUSTRALIAN LADIES AMATEUR RADIO ASSOCIATION, PO Box 4, Middle Brighton 3186. Meetings held on the fourth Monday of each month on 3580 kHz at 1030z. Nets each Monday on 3580 kHz at 1030z. State representatives: Sue VK2PSC, Marilyn VK3DMS, Margaret VK4AOE, Jenny VK5ANW, Poppy VK6YF and Helene VK7HD. Association issues the ALARA Award.

DOWN UNDER DXERS CONTEST CLUB, PO Box 31, Winmalee 2777. Meetings held on air as required. Object of club: to promote and foster amateur radio contesting in Australia. State representatives: Les VK2WU, Tony VK3CE, Martin VK5GN, Lance VK6DU. Membership enquiries welcome — contact Rob VK5ARO, 78 Currawong Crescent, Modbury Heights 5079. Newsletter published monthly.

NEW SOUTH WALES

AUSTRALIAN NATIONAL RADIO TELEPRINTER SOCIETY, PO Box 860, Crow's Nest, NSW 2065. Meetings are held on the First Friday in Feb, Apr, Jun, Aug, Oct and Dec, at the Powerhouse Museum, Marian St, Ultimo, Sydney. VK2TTY broadcasts time and frequencies are: 0030z on 7.045, 14.090, 14.095 and 146.675 MHz; at 0930z on 3.545 and 146.675 MHz. Repeater 146.675 MHz. Bi-monthly magazine to members.

ARMIDALE & DISTRICT AMATEUR RADIO CLUB, c/-Lot 20, Chessington Estate, Invergowrie, NSW 2350. Club meets second Thursday of each month at 32 Grafton Road, Armidale — visitors welcome. Club callsign VK2DGZ. Club nets on 3588 kHz any time; repeater 7, 146.950 MHz and 438.025 MHz.

BLUE MOUNTAINS AMATEUR RADIO CLUB, PO Box 54, Springwood NSW 2777. Meetings held on the first Friday of each month at 8 pm local time at Springwood High School. Club Net each Tuesday on 3540 kHz at 8.30 pm local and on 147.050 MHz at 9.00 pm local. Club callsign VK2AUX and VK2NCM. Club repeaters VK2RBM on 147.050 and VK2RUT on 432.375 MHz. Licence classes held each Monday and Wednesday evening.

CYCA AMATEUR RADIO GROUP, c/-Cruising Yacht Club of Australia, New Beach Road, Darling Point 2027. Meetings held on the second Monday of each month at 2000 local. Club callsign VK2CYA. Novice and AOC classes held as required. Contact Alan Brown (546 4758) or Richard Cortis (665 9680).

CASTLE HILL AMATEUR RADIO CLUB meets at the RSL Club, Castle St, Castle Hill on the first Wednesday of each month. Junior club meets each Tuesday at 7.30 pm. Novice licence classes conducted. Club callsign VK2DXS and VK2DCB. For further details phone (senior club) Ian O'Toole (02) 680 2122 or (junior club) Nobby Clark (02) 674 1761.

CENTRAL COAST AMATEUR RADIO CLUB, PO Box 238, Gosford NSW 2250. Meetings held on the first and third Friday of each month at 8.00 pm at the club rooms, Dandaloo St, Kariong. Club net each Tuesday on 3560 kHz at 8.00 pm. Club callsigns VK2EH and VK2AFY. Club repeater VK2RAG on 146.750 and 438.075 MHz. Novice, Limited and Full Call licence classes according to demand.

COFFS HARBOUR & DISTRICT A.R.C., PO Box 655, Coffs Harbour, NSW 2450. Meetings held on Wednesday at 7.00 pm at the Orara High School, Bray Street, Coffs Harbour. Club net each Monday on 3610 kHz at 8.00 pm local.

CRESTWOOD AMATEUR RADIO CLUB, 16 Turon Ave, Baulkham Hills NSW 2153. Meetings held at above address each Saturday (except first Saturday of the month) at 7.30 pm. Club callsign VK2BFZ. Novice and AOC courses conducted. Contact Bob Lloyd-Jones (02) 639 0267 or Dave Scott (02) 624 2636.

FAR SOUTH COAST AMATEUR RADIO CLUB, PO Box 407, Bega, NSW 2550. Meetings held as required at Bega Primary School. Club repeater VK2RES on 146.750 MHz. Secretary: Terry Dawson VK2KTJ.

FISHERS GHOST AMATEUR RADIO CLUB, PO Box 249, Camden NSW 2570. Club nets each Friday on 3580 kHz at 1000z and each Sunday at 28.520 MHz at 1000z. Club callsign VK2PFG.

GLEN INNES & DISTRICT A.R.C., PO Box 26, Glen Innes NSW 2370. Meetings held on the last Tuesday of each month at 7.30 pm local, at Glen Innes High School. Club net each Sunday on 3580 kHz at 8.00 pm local. Club callsign VK2DOQ. Novice classes at Glen Innes High School each Wednesday (during school term) from 11.45 to 12.50.

GOULBURN AMATEUR RADIO SOCIETY, PO Box 350, Goulburn NSW 2580. Meetings held on the second Wednesday of each month at Goulburn Police Boys Club at 8.00 pm local. Club net each Sunday on 3615 kHz at 9.00 pm local.

GRIFFITH RADIO CLUB, PO Box 4, Griffith NSW 2680. Meetings held on the third Monday of each month at 7.30 pm local, at the State Emergency Service headquarters. Club net each Wednesday on 28.480 MHz at 9.00 pm local. Club callsign VB2DBK. Club repeater VK2RGF on 146.850 MHz.

GUNNEDAH AND DISTRICT A.R.C., C/-Gunnedah High School, Marquis St, Gunnedah. Meetings held on the first Thursday of each month at the Scout Hall, Coonabarabran Road, Gunnedah (near Showgrounds) at 8.00 pm local. Club repeater VK2RAB on 146.850 MHz.

HORNSBY AND DISTRICT AMATEUR RADIO CLUB, PO Box 362, Hornsby, NSW 2077. Meetings held on the first Wednesday of each month at 2000 local at Hawkins Hall, Cnr Sefton Road and Lockerbie Road, Normanhurst. Club net each Monday on 3615 kHz at 1000z. Club callsign VK2APF. Club beacon VK2RCW (slow morse) on 147.400 MHz. Club repeater VK2RNS on 147.250 MHz.

ILLAWARRA AMATEUR RADIO SOCIETY, PO Box 1838, Wollongong NSW 2519. Meetings held on the second Monday of each month (except January) at 7.30 pm local at the Congregational Church Hall, Coombe St, Wollongong. Club nets each Sunday on 3562 kHz at 8.00 pm local and each Tuesday on 28.440 MHz CW at 8.00 pm local. Club callsign VK2AMW. Club repeaters VK2RAW on 146.850 MHz, VK2RIL on 147.275 MHz and 438.725 MHz, and VK2RUW on 438.225 MHz. Licence classes run through local Technical College.

LIVERPOOL & DISTRICT A.R.C., PO Box 690, Liverpool NSW 2170. Meetings held on the second Tuesday of each month at 7.30 pm local at the Public School, Bigge St, Liverpool. Club callsign VK2AZD. Club repeater VK2RLD on 147.375 MHz. Full members must have current VK callsign. Novice classes commence 6-2-84 at the school.

MANLY WARRINGAH RADIO SOCIETY, PO Box 186, Brookvale NSW 2100. Meetings held each Wednesday at 7.30 pm local at the Warringah Emergency Centre, Beacon Hill. Club callsign VK2MB. Club repeater VK2RMB on 146.875 MHz. Licensing advice available on request.

CLUB DIRECTORY

NORTH WEST AMATEUR RADIO GROUP, PO Box 120, Inverell NSW. Meetings held as required. Club net each Monday on 3575 kHz at 2030 local. Club repeaters VK2RMI Moree on 146.650 MHz, VK2RAB Gunnedah on 146.850 MHz and VK2RNE Glen Innes on 146.950 MHz.

NOVICE A.R.G. OF NSW, c/-17 Bamfield Avenue, Yagoona West NSW 2199. Club net each Tuesday night at 2000 local on 28.385 MHz. Club callsign VK2NAO. Affiliated with the WIA.

ORANA REGION AMATEUR RADIO CLUB, 38 Edwin St, Dubbo NSW 2380. Meetings held on the last Friday of each month at 8.00 pm local at the Orana Education Centre, Darling St, Dubbo. Club net each Monday, Wednesday and Friday on 3620 kHz at 2000 local. Club callsign VK2EOR. Club repeater VK2RCC on 146.800 MHz.

ORANGE AMATEUR RADIO CLUB, PO Box 1065, Orange NSW 2800. Meetings held on the first Friday of each month at 7.30 pm at the SES Headquarters, McLachlan St, Orange. Club net each Sunday on 146.700 MHz at 2030 local. Club callsign VK2AOA. Club repeater VK2RAO on 146.700 MHz.

ST GEORGE AMATEUR RADIO SOCIETY, PO Box 77, Penrith NSW 2222. Meetings held on the first Wednesday of each month at 7.30 pm at the Allawah Scout Hall, cnr Blakesly Rd and Bellview Parade, South Hurstville. Club net each Sunday on 3555 kHz at 0800 local, each Tuesday on 14.110 MHz at 1930 local and 28.520 MHz at 2000 local, and each Thursday on 146.800 MHz at 2000 local. Club callsign VK2LE. Club repeater VK2RLE on 146.800 MHz, VK2RDX on 146.650 MHz and VK2RUH on 438.425 MHz. Novice classes each Thursday at 1930 local.

SOUTHERN HIGHLANDS A.R.S., c/-Telephone Exchange, Bowral NSW 2576. Meetings as advised in newsletter. Club net each Sunday on 3615 kHz at 2030 local. Club callsign VK2BFI. Club repeater VK2RHR on 147.350 MHz. Enquiries to Frank VK2VGX (048) 61 1690.

SUMMERLAND AMATEUR RADIO CLUB, PO Box 524, Lismore NSW 2480. Meetings held on the third Friday of each month at 2000 local at Kadina High School, Kadina St, Goonellabah. Club nets each day on 3605 kHz at 0630 local, each Friday on 146.800 MHz and 28.470 MHz at 2000 local. Club callsign VK2AHG. Club repeaters VK2RIC on 146.800 MHz and VK2RSC on 438.675 MHz.

TAMWORTH & DISTRICT A.R.C. PO Box 120, Tamworth NSW 2340. Meetings held on the second Wednesday of each month at 1930 local at the upstairs meeting rooms of Tamworth & District Workmens Club, Reserve Place, Tamworth. Club net each Wednesday on 3620 kHz at 2000 local. Club callsign VK2DCI. Club repeater VK2RTM on 146.750 MHz.

TAREE AMATEUR RADIO CLUB, PO Box 712, Taree NSW 2430. Meetings held at SES Headquarters, Victoria St, Taree, on the second Tuesday of each month at 1930 local. Club net each Monday on 28.480 MHz at 2000 local. NAOCP and AOCPP classes each Wednesday at 1830 local at Chatham High School, Davis St, Chatham.

WAGGA AMATEUR RADIO CLUB, PO Box 294, Wagga Wagga NSW 2650. Meetings held on the last Friday of each month at 2000 local at Wagga Wagga Rescue Club rooms, Bolton St, Wagga. Club net each Wednesday on 28.490 MHz at 2000 local. Club callsigns VK2WG and VK2NWG. Club repeater VK2RWG on 146.750 MHz. Licence classes held when required.

WESTERN SUBURBS A.R.C., meets on the second and fourth Tuesday of each month at Bass Hill RSL Club, Hector St, Bass Hill. Club net each Monday on 28.570 MHz at 2000 local.

WESTERN RADIO CLUB, PO Box 666, Blacktown NSW 2148. Meetings held on the second Tuesday of each month at 1945 local at the Scout Hall, 80 Bungaribee Road, Blacktown.

WESTLAKES AMATEUR RADIO CLUB, PO Box 1, Teralba NSW 2284. Meetings held each Saturday afternoon and Wednesday evening. Write for list of Licence study aids. Club callsign VK2ATZ.

VICTORIA

BALLARAT AMATEUR RADIO GROUP, PO Box 216E, Ballarat Vic 3350. Meetings held on the last Friday of each month at 1930 local at the Education Centre, Hopetown St, Ballarat. Club net each Thursday on 3610 kHz at 2000 local. Club callsign VK3BML. Club repeater VK3RBA on 146.750 MHz. Novice and AOCPP courses as required.

DJERRIWARRH AMATEUR RADIO CLUB, PO Box 29, Melton South Vic 3338. Meetings held on the first Tuesday of each month at Melton Technical School, Wilsons Road, Melton South at 1930 local. Club callsign VK3BRW. Novice classes held three times per month.

EASTERN & MOUNTAIN DISTRICT RADIO CLUB, PO Box 87, Mitcham 3132. Meetings held on the first Friday of each month in the Willis Room, Nunawading Civic Centre, at 2000 local. Computer Group meets second and fourth Friday of each month in the Coffee Shop, Nunawading Civic Centre, at 2000 local. "Coffee shop" held on third Friday each month at the Coffee Shop, 2000 local. RTTY broadcast and callback each Tuesday evening at 2000 local on VK3RTY 147.350 MHz. Club nets each Wednesday at 2000 local on 3572 kHz and each Sunday at 0930 local on 28474 kHz. Slow Morse at 2030 local on 28340 kHz Monday to Friday. Club callsigns VK3ER, VK3BNW and VK3TTY. Club repeaters VK3REC 147.175 MHz and VK3RTY (RTTY) 147.350 MHz.

FRANKSTON AND MORNINGTON PENINSULA A.R.C. PO Box 38, Frankston Vic 3199. Meetings held on the second and fourth Friday of each month at the Brotherhood of St Lawrence Hall, Dandenong-Frankston Road, Carrum Downs, at 2000 local. Club net each Wednesday on 3570 kHz at 2000 local. Club callsign VK3BHU.

GEELONG AMATEUR RADIO CLUB, PO Box 520, Geelong Vic 3220. Meetings held each Friday at 2000 local at the rooms, Storrer St, East Geelong. Club net each Monday on 147.000 MHz at 1900 local. Club callsign VK3ATL. Club maintains repeater VK3RGL on 147.000 and beacon VK3RGG on 52.330 MHz.

GEELONG RADIO & ELECTRONICS SOCIETY, PO Box 962, Geelong Vic 3220. Meetings held each Thursday at 1930 local at the club rooms, Breakwater Road, Belmont Common. Club callsign VK3ANR. Novice classes conducted each Thursday at 1915 local.

GIPPSLAND GATE RADIO CLUB, PO Box 98, Dandenong Vic 3175. Meetings held on the second and fourth Friday of each month at the Oakwood Park Scout Hall, Heyington Cres, Noble Park, at 2000 local. Club net on 3585 kHz each Thursday at 2000 local. Club callsign VK3BJA.

HAMILTON & DISTRICT RADIO CLUB, PO Box 188, Hamilton Vic 3300. Meetings held on the second Friday of each month at 2000 local at the VRI Hall, Hamilton.

MOORABBIN & DISTRICT RADIO CLUB, PO Box 88, East Bentleigh Vic 3165. Meetings held on the first and third Friday of each month at the Combined Clubs Hall, Turner Road Reserve,

CLUB DIRECTORY

Highett, at 2000 local. Club net on 28.450 MHz each Friday at 2000 local. Club callsigns VK3APC and VK3VXM.

NEC AMATEUR RADIO CLUB, 649-655 Springvale Road, Mulgrave. Meetings held each Wednesday afternoon 1630 local. Club callsign VK3DKY. For enquiries phone David Burger on (03) 560 5233.

NORTH-EASTERN RADIO GROUP, PO Box 270, Greensborough, VIC 3088. Meetings held first Thursday of each month at Montmorency High School, Para Road, Montmorency at 2000 local. Refreshments available, all welcome. Club net on 147.125 MHz FM. Club callsign VK3CNE.

SHEPPARTON & DISTRICT AMATEUR RADIO CLUB, PO Box 692, Shepparton, VIC 3630. Meetings held on the first Thursday of each month in the SES rooms, Marueni St, Shepparton. Club net each Tuesday at 1930 local on 3615 kHz and at 2000 local on VK3RGV 146.650 MHz. Club call VK3DBS. Enquiries to Peter O'Keefe on (058) 21 6070.

SOUTHERN PENINSULA A.R.C., PO Box 206, Rosebud Vic 3939. Meetings held on the first and third Monday of each month at 1930 local at the club rooms, cnr Besgrove St and Boneo Rd, Rosebud. Club nets each Tuesday on 3620 kHz at 2000 local and each Sunday on 28.330 MHz at 1030 local. Club callsign VK3BSP.

TALANGATTA RADIO CLUB, c/-RMB 4113, Talangatta Vic 3700. Meetings held on the second Sunday of each month at the Talangatta High School at 1930 local. Club net each Friday on 3600 kHz at 1930 local.

VICTORIAN RAILWAYS INSTITUTE WIRELESS CLUB, c/-47 Goulburn Drive, Rowville 3178. Established 1926. Membership open to members of VRI. Meetings held each Thursday at 1300 local and general meetings first Thursday of each month at 1830 local at the clubroom, Room 410, Flinders Street Station building. Visitors welcome. Club nets on 3585 kHz at 0900z (1930 local) each Wednesday and on 52.080 MHz at 2315z (0915 local) each Sunday. Club call VK3RI.

WARRNAMBOOL AMATEUR RADIO CLUB, PO Box 724, Warrnambool Vic 3280. Meetings held on the first and third Wednesday of each month at 2000 local at the Buffalo Lodge Rooms, Koroit St. Club callsign VK3BHD.

WIA - VICTORIAN DIVISION, 412 Brunswick St, Fitzroy Vic 3065. General meetings held on the second Wednesday of each month at 2000 local at the above address. Callsign VK3W1. Broadcast each Sunday at 1030 local on 80 and 40 metres and 146.850 MHz. Enquiries (03) 417 3535 1000-1500 local.

WIA - EASTERN ZONE, PO Box 339, Moe Vic 3825. Net each Sunday at 1930 local on VK3RLV repeater (2000 EDST). Enquiries to Stewart VK3BSM (051) 27 4229.

WIA - EAST GIPPSLAND ZONE, PO Box 599, Bairnsdale, Vic. 3875. Meetings held on the third Thursday of each month at 2000 local, alternating between the API Club Rooms at Bairnsdale and Sale. Net each Monday on 3585 kHz at 2000 local. Repeater VK3REG on 146.900 MHz.

WIA - MIDLAND ZONE, 28 Lawrence St, Castlemaine, Vic, 3450. Meetings held on the third Friday of each month at 2000 local at Eaglehawk and Long Gully Community Health Centre. Nets each Tuesday on 14.200 MHz at 1000z and each Thursday on 3595 kHz at 1000z. Repeater VK3RCV on 147.750 kHz.

WIA - NORTH WESTERN ZONE, PO Box 91, Irymple, Vic,

3498. Quarterly meetings held at the WIA club rooms at Mildura Airport. NAOCP and AOCPC classes presently running. Contact Marilyn VK3DMS or Maurie VK3CWB for details.

WESTERN SUBURBS RADIO CLUB, PO Box 336, Reservoir, VIC 3073. Meetings are held at the Ern Rose Pavilion (Preston Yacht Club, Edwardes Park Lake), Seaver Grove, Reservoir, on the third Friday of each month at 2000 local. Club callsign VK3AWS. Secretary: Tom Page VK3AGH.

SOUTH AUSTRALIA

ELIZABETH AMATEUR RADIO CLUB, PO Box 8, Elizabeth SA 5112. Meetings held on the first Saturday of each month at 1930 local at 'The Water Tower', Kettering Rd, Elizabeth South. Club callsign VK5LZ.

LOWER EYRE PENINSULA AMATEUR RADIO CLUB INC, PO Box 937, Port Lincoln 5606. Club meets on the first Wednesday of each month at 2000 local at the club rooms, Les Watts Drive, next to the SES headquarters. A workshop meeting is held each Wednesday night at 2000 local. The club net operates daily on 3560 kHz at 0930 UTC. Club callsign VK5ALE. Club issues the Matthew Flinders award.

LOWER MURRAY AMATEUR RADIO CLUB INC, PO Box 234, Murray Bridge, 5253. Meetings held on the second and fourth Tuesday of each month at the Combined Clubs Meeting Rooms, Johnstone Park (entry off Thomas St), Murray Bridge, at 1930 local. Club net each Monday on 3620 kHz at 1000z. Club callsign VK5ALM.

NARACOORTE AMATEUR RADIO CLUB, PO Box 899, Naracoorte SA 5271. Meetings held on the fourth Friday of each month at 2000 local at the TAFE Centre or QTH of VK5ET. Phone (087) 62 2034 for confirmation. Club net each Tuesday at 2000 local on 3575 kHz. Club callsign VK5ARN.

PORT ADELAIDE RADIO CLUB, c/-PO Box 265, Port Adelaide 5015. Club meetings held every alternate Wednesday at 1930 local at 155 Hart Street, Glanville. Club net each day at 1930 local on 28440 kHz. Club callsign VK5APC. Membership enquiries to M. Hillard, Secretary/Treasurer.

SECOND ADELAIDE SCOUT GROUP RADIO CLUB, c/-11 Gothic Drive, Paradise SA 5075. Meetings held on the first Saturday of each month at Torrens Park Guide Hall at 1930 local. Club callsign VK5BPA.

SOUTH AUSTRALIAN AMATEUR TELEVISION GROUP, c/-37 Second Ave, Sefton Park, SA 5083. Meetings held on the first Monday of each even numbered month at 7.30pm local at various locations but based at the VK5 WIA headquarters. Club net each Wednesday on VK5RTV repeater, VK5RCN repeater, 147.40 MHz FM and 147.30 MHz FM. Club repeaters VK5RTV (Adelaide) and VK5RCN (Central North SA). Full members must be active ATV operators. Others can be Associate members.

SOUTH COAST AMATEUR RADIO CLUB Inc, PO Box 333, Morphett Vale, SA 5162. Meetings held on the first and third Thursday of each month at 8pm local at 12 Baden Terrace, O'Sullivan Beach. Club net each Tuesday on 3595 kHz at 8pm local. Club callsign VK5ARC.

SOUTH EAST RADIO GROUP Inc, PO Box 1103, Mount Gambier, SA 5290. Meetings held on the first and third Friday of each month at 7.30pm at the clubrooms, Olympic Park, Mount Gambier. Club net each Monday at 8.30pm local on 3585 kHz and 146.900 MHz. Club callsign VK5SR. Club repeater VK5RMG on 146.900 MHz. Beacon VK5RSE. Full members must be licenced.

CLUB DIRECTORY

WESTERN AUSTRALIA

AUSTRALIAN AMATEUR RADIO TELEPRINTER GROUP, 7 Gregory Way, Coolbellup, WA 6163. Meetings held bi-monthly on the first Tuesday in Feb, April, June, August, October and December. RTTY broadcasts each Sunday at 2000 hours on 146.6 MHz and 3530 kHz. Assistance given in all aspects of this mode of communications. Enquiries to the Secretary on (09) 337 5905.

GOLDFIELDS AMATEUR RADIO GROUP, PO Box 463, Kalgoorlie, WA 6430. Meetings held on the first Wednesday of each month at 8pm at Hainault Gold Mine theatre. Club callsign VK6AGF. Club six metre beacon VK6RTU. Club repeaters VK6RAK on 147.000 MHz and VK6RKB on 146.850 MHz.

NORTH WEST RADIO SOCIETY, active throughout the Pilbara region. Club net each Sunday on 3605 kHz at 1130z, and on 28.445 MHz for mobiles as required. Club callsigns VKANW (Port Hedland), VK6MN (Mount Newman). Enquiries to John VK6AFA (Port Hedland Chapter) on (091) 72 1022, Mal VK6NV (Newman Chapter) on (091) 75 1317, VK6ZOH (Karratha Chapter) on (091) 85 1330, or Gordon VK6NCN (Wickham Chapter) on (091) 87 1074.

PARABURDOO AMATEUR RADIO CLUB, PO Box 95, Paraburdoo, WA 6754. Club net at 2000 hrs AWST each Sunday on 3610 kHz USB. Club callsign VK6PA. Club repeater VK6RPT on 146.900 MHz. AOC and Novice classes available.

PEEL AMATEUR RADIO GROUP, c/-5 Yeulba Street, Falcon, WA 6210. Meetings are held on their first Wednesday of each month at 1930 local at members homes around the Mandurah area. Club net each Sunday on 3575 kHz at 0830 local. Enquiries to (095) 35 1246.

PERTH RADIO LEAGUE OF WA Inc, PO Box N1102, GPO Perth, WA 6001. Meetings held on the second Tuesday of each month at 8pm at Maylands Bowling and Recreation Club, Clarkson Road, Maylands. Club callsigns VK6NFL and VK6APR. Novice classes for members on demand.

SOUTHERN ELECTRONICS GROUP, c/-72 Drew St, Albany, WA 6330. Meetings held on the first of each month at 8pm at Spencer Park Primary School staff room. Club callsign VK6SR. Club repeaters VK6RAA on 146.700 MHz and VK6RAL on 146.800 MHz. Licence classes conducted at Albany Technical College.

WEST AUSTRALIAN VHF GROUP INC, PO Box 189, Applecross 6153. Meetings held on the fourth Monday of each month at 2000 local next to the Telecommunications Museum, Wireless Hill, Melville. Group callsigns VK6WH and VK6VF. Monthly fox hunts on the fourth Saturday of each month.

WICKHAM AMATEUR RADIO CLUB, PO Box 7, Wickham, WA 6720. Club callsign VK6AAE. Club repeater VK6RWR. Novice and AOC licence instruction available. Quarterly fox hunts in association with the North West Radio Group.

QUEENSLAND

BRISBANE AMATEUR RADIO CLUB, PO Box 300, Darra, QLD 4076. Meetings held on the second and fourth Friday of each month at 1930 EAT at the SES 'C' group headquarters, cnr School and Ipswich Roads, Yeronga. Club net each Monday on 28.440 MHz at 1930 EAT and each Wednesday on 146.550 MHz at 1930 EAT. Club callsigns VK4BA and VK4WIL.

BRISBANE NORTH RADIO CLUB, PO Box 78, Chermside,

QLD 4032. Meetings held on the second and fourth Friday of each month at 7.30pm at the Hooper Centre, Wavell Heights School, Kuran St, Chermside. Club net each Monday on 28.420 MHz at 7.30pm. Club callsign VK4WIN.

BRISBANE VHF GROUP, PO Box 911, Fortitude Valley, QLD 4006. Meetings held on the fourth Wednesday of each month at 7.30pm at Newmarket State High School, Banks St. Club net after callback from WIA broadcast each Sunday around 0930 on repeater 146.700 MHz. Club callsign VK4IF. Club repeater VK4RBN on 146.700 MHz.

BUNDABERG AMATEUR RADIO CLUB, PO Box 129, Bundaberg, QLD 4670. Meetings held on the fourth Wednesday of each month at 7.30pm at Norville Primary School. Club callsign VK4BW. Club repeaters VK4RBU on 146.800 MHz and VK4RBU on 438.675 MHz.

CAIRNS AMATEUR RADIO CLUB, PO Box 1426, Cairns, QLD 4870. Meetings held on the second Thursday of each month at 8pm at the SES headquarters, McNamara St, Cairns. Club callsign VK4HM. Enquiries to the Secretary, Anne Benson VK4NXX on 53 4115.

CITY OF BRISBANE RADIO SOCIETY, PO Box 322, Mt Gravatt, QLD 4122. Meetings held on the first Monday of each month at 7.30pm at Chester Estates Scout Hall, Crewe St, Mt Gravatt. Club net each Sunday at 0930z on 28.450 MHz and 1000z on 3575 kHz.

DALBY & DISTRICT AMATEUR RADIO CLUB, PO Box 758, Dalby, QLD 4405. Meetings held on the first Tuesday of each month at 8pm at Dalby South State School Education Centre. Club net each Sunday on 3564 kHz at 8.30pm and each Thursday on 146.750 MHz. Club callsign VK4WIC.

DARLING DOWNS RADIO CLUB, PO Box 3014, Town Hall, Toowoomba, QLD 4350. Meetings held on the last Friday of each month (except Dec) at 7.30pm at Toowoomba Education Centre, Baker St, Toowoomba. Club net each Saturday on 3587 kHz at 7.30pm. Club callsign VK4WID. Club repeaters VK4RDD on 146.750 MHz and VK4RDU on 439.275 MHz.

GLADSTONE AMATEUR RADIO CLUB, PO Box 1030, Gladstone, QLD 4680. Meetings held on the second Monday of each month at 7.30pm at Gladstone Central State School. Club net each Monday on 3592 kHz at 7pm. Club repeater VK4RGA on 146.900 MHz. Contact the Secretary on 75 0132 for further details.

GOLD COAST AMATEUR RADIO SOCIETY, PO Box 588, Southport, QLD 4215. Meetings held on the second Friday of each month at 7.30pm at the SCWO rooms, Lawson St, Southport (behind public library). Club net each Wednesday on 28.450 MHz at 1930 local, each Friday on 3615 kHz at 1930 local, daily on repeater 6700 at 0800 local, Sundays on repeater 6700 at 1900 local and Wicen net each Tuesday on 28.450 MHz at 1930 local. Club callsigns VK4WIG and VK4VGC. Club repeaters VK4RGC on 146.700 MHz and VK4RGC on 438.225 MHz.

GYMPIE AMATEUR RADIO CLUB, PO Box 384, Gympie QLD 4570. Meetings held on the second Tuesday of each month at 2000 local at the Gympie High School. Club net each Wednesday on 3570 kHz at 2000 local. Club callsign VK4WIH. Club repeater VK4RGY on 147.100 MHz reverse.

IPSWICH & DISTRICT RADIO CLUB, PO Box 250, Ipswich, QLD 4305. Meetings held on the second and fourth Friday of each month at 7.30pm at the clubrooms, Deebling St, Ipswich. Club net each Thursday on 28.500 MHz at 7.30pm from first Thursday in

CLUB DIRECTORY

October. Moves to 3590 kHz first Thursday in April. Club repeater VK4RAI on 146.900 MHz. Licence class available.

MACKAY AMATEUR RADIO CLUB, PO Box 1065, Mackay, QLD 4740. Meetings are held on the first Friday of each month at 8pm at the SES building, Swayne St, North Mackay. Club net each Friday on 3615 kHz at 8.30pm. Club callsign VK4WIM. Club repeater VK4RMK on 147.000 MHz.

MOUNT ISA & DISTRICTS AMATEUR RADIO GROUP, PO Box 1715, Mount Isa, QLD 4825. Club net each Thursday on 3610 kHz at 1000z. Club callsign VK4WII. Club repeater VK4RMI on 146.700 MHz.

QRI AMATEUR RADIO CLUB, Turbot St, Brisbane, QLD 4000. Meetings held four times per year. Club callsign VK4BQR. Club net each Wednesday on 3580 kHz at 0900z. Open to members of Queensland Railways Institute.

QUEENSLAND TROPICAL VHF ASSOCIATION, for further information direct enquiries to The Secretary, PO Box 5510, Mail Centre Cairns, 4870.

REDCLIFFE RADIO CLUB, PO Box 20, Woody Point, QLD 4019. Meetings held each Monday at 7.30pm at Redcliffe Education Centre, Hensell St, Redcliffe. Club net each Sunday on 3612 kHz at 7.30pm. Club callsigns VK4RC and VK4VRC. Novice and AOCP classes are available.

ROMA & DISTRICT AMATEUR RADIO SOCIETY, PO Box 237, Roma, QLD 4455. Meetings held on the third Friday of each month at 7.40pm at the Maranoa Club, Hawthorne St, Roma. Club net each Friday on 3610 kHz at 1000z. Club callsigns VK4AEB and VK4NCI.

SOUTH EAST QUEENSLAND ATV GROUP, PO Box 3, Chermerside, QLD 4032. Meetings held on the first Friday of each month at 7.30pm at the Hooper Centre, Kuran St, Chermerside. Club net each Tuesday at 7.30pm on 147.400 MHz. Club repeater VK4RQT (ATV). Members must have an interest in fast scan ATV.

SOUTH EAST QUEENSLAND TELETYPE GROUP, PO Box 184, Fortitude Valley, QLD 4006. Meetings held on the first Friday of each month at 8pm at the library, St Brendans School, Hatree St, Marooka. Club repeater VK4RBT (RTTY) on 147.650 MHz. Club callsign VK4TTY. Club net each Sunday at 10.30am on the repeater and RTTY frequencies.

SUNSHINE COAST AMATEUR RADIO CLUB, PO Box 80, Nambour 4560. Meetings held on the first Tuesday of each month

at the Bli Bli Public Hall, Bli Bli, at 1930 local. Club net each Thursday at 0930z on 3595 kHz and 2000z on 28400 kHz. Club callsign VK4WIS. Club issues the Pelican Award.

TASMANIA

WIA — NORTHERN BRANCH, PO Box 275, Launceston, TAS 7250. Meetings held on the second Friday of each month at Kings Meadow High School, Launceston. Branch callsign VK7NB. New repeater VK7RAB (UHF) under test.

NORTH WESTERN BRANCH OF WIA: PO Box 194, Penguin, Tasmania 7316. Club call VK7NW. Meetings held on the second Tuesday of each month at 7.30pm at Penguin High School. Project activity and club station nights every Friday at 8.00pm at PHS. Contact VK7WZ (Pres). VK7mm, VK7AX or VK7AH (Sec) for details. Kits for some projects available. Interest groups: ATV, SSTV, RTTY, Satellites and computers.

SOUTHERN BRANCH OF THE WIA: P.O. Box 123, Sandy Bay, 7005. Meetings first Wednesday of each month at State Emergency Service, Melville St., Hobart. Enquiries Harvey Skegg. Phone 43 6337 (VK7HK).

NORTHERN TERRITORY

ALICE SPRINGS AMATEUR RADIO CLUB, PO Box 2953, Alice Springs 5750. Meetings held at the club rooms, Wills Terrace, Alice Springs, at 2000 local on the first Monday of each month. Club callsign VK8AR. Club repeater VK8RCA 146.400 Rx, 147.000 Tx. Club net frequency 28490 kHz. Award nets each Sunday at 0400z on 21180 kHz. Secretary Brian Austin VK8NBA.

DARWIN AMATEUR RADIO CLUB, PO Box 37317, Winnellie 5789. Meetings held on the first Monday of each month at the Club Rooms, Sports House, Waratah Crescent, Fannie Bay. Club rooms open each Monday night for club and social activities. Club callsign VK8DA. Club repeater VK8RTE 146.400 Rx, 147.000 Tx. Club net each Sunday at 1130z on 21150 kHz and 146.550 MHz. Enquiries to the Secretary, Larry Munns VK8LM on (089) 85 1549.

AUSTRALIAN CAPITAL TERRITORY

AUSTRALIAN CAPITAL CHAPTER OF TENTEN INTERNATIONAL NET INC: Meets on 28.585 MHz every Friday at 2300Z (Saturday 9am AEST) Correspondence: CM John Clare VK1KJC, PO Box 36, Cook, ACT, 2614.

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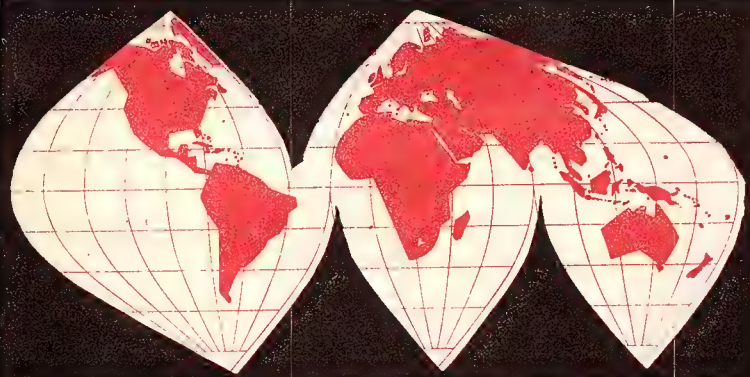
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DX NOTES

Edited by Tony Gilbert VK3CE.

With material from Rob McKibbin VK6ARO (78 Currawong Cres., Modbury Hts 5092), Jim Smith VK9NS (PO Box 90, Norfolk Island 2899), The ARRL Letter, QRZ-DX and reader contributions.



China

A letter to hand from Richard VK2VRN says that the new Chinese station at Quingua University, in suburban Beijing, is readily available for Australian Novice stations.

BY1QH uses a Kenwood TS-180S and three element monobander at 75 feet on 15 metres, operating on the top end of the Novice segment on 21.180 split, listening 170-190.

Richard obtained this information from Feng and Yun who are students at the university and operate between 0400-0600z. Richard understands they are not keen CW operators but they do speak good English. QSL is via PO Box 2654, Beijing PRC.

While we're on the subject, a note with our Christmas card from Xuru, chief operator at BY4AA, says this station is also maintaining regular operations on the Novice bands and listening for VK stations. Sked information was included but did not arrive in time to be included last issue when it would have been usable.

Mellish Reef

Cards for this operation should begin to flow fairly soon. A minor delay occurred due to artwork problems but the production of the cards is now in the hands of Heard Island DX Club, who kindly offered to donate the cards for the operation. For a country that is not high on the wanted list, everyone who made a contact seems to want a QSL pretty badly!

QSL Routes

Richard VK2VRN, who sent in the China news, asked for information on the following QSL routes:

VU7WCY/APE (17.1.84)
ZLOAJW/ZL8 (25.3.84)
VE3MR
9N1NRK
K6KEW
ZL4QS
FW0BX (15.10.84)
W4WJ (for BV0W)
13EJ (for FOIQR/FO8)
AP2MQ
T30CH (18.2.84)
VU2GDG
CT3BM
9V1TL

If anyone can assist with proven routes for these, please drop a line to Richard Newbold, c/-BP Service Station, Maclean 2463. A copy to ARA wouldn't go amiss either.

DX Window

Further to our recent (exhaustive?) list of stations that are being worked around 3795 kHz, a few others are available at the moment as well if you can drag them up from the US nets: VP8AOB on South Orkney (via K0JW); 6W1DY, Jack; KH6AT, Bryce; and 8R1RBF, Dick.

Laccadives?

Interesting to note in an article from Tom King VK2ATJ that Rajiv Ghandi, the new Prime Minister of India, is a ham and holds the callsign VU2RG. Could this mean a new incentive to activate VU7 Laccadives? Only time will tell, but the chances have got to be much better than before. Perhaps some petitions from the DX community would help.

While on the subject of notable amateurs, the new King of Malaysia (how many of you knew Malaysia had a king?) is King Iskandar, the Sultan of Johore, who operates under the call 9M1 (that's all, just Nine Mike One or Malaysia One). I don't think he's a DXer though!

Can we expect to see a royalty/premiers net some time in the future...9M1, JY1, VU2RG, etc, etc?

SMOM?

Was the 1A0ED station heard on 4 December dinkum? Could it have been a special celebration by the mighty knights? We don't think so...but who can tell these days? Quoted 12ED...suck it and see.

Desecheo

Reading the H13RST/KP5 story in QRZ-DX just before Christmas it was apparent that some expeditions get it a lot easier than others...not to actually name names, of course.

Desecheo is located just 17 miles from Puerto Rico in the Mono Passage Channel. It has sub-tropical weather and is 360 acres in area, occupied only by goats, monkeys, dogs and cats.

Operating permission for the island comes from the US Department of the Interior (it seems), although a Mr. Furness at Cabo Rojo appears to have the final say in it. It took six months to obtain written permission and the trip had to be rescheduled from January to mid-May.

After realising that they would not be ready for a May departure, the trip was moved back again, this time to July. This left only two months to organise the expedition and the unsavoury prospect of a third post-

ponement in the wind.

After some dropouts and funding worries, a final team consisting of Jose WP4ATF, Rodolfo H13RST, Carlos NP4KA, Luis NP4C, Felipe NP4Z, Carmelo KP4HC and Rafael WP4D was selected.

The expedition sailed from the yacht club at Cabo Rojo aboard the 37 foot 'Orca' on 22 July. During the trip, most of the team just slept (sounds like another expedition team we know).

Once on Desecheo, the 'Orca' departed, leaving the team to their own devices until it returned, hopefully on 28 July, to pick them up.

H13RST/KP5 fired up at 0005z on 23 July on phone, with WP4ATF/KP5 on CW (me-thinks a better call for CW could have been picked from those available) and good pile-ups were generated, as you would expect after four years of silence.

Two days later, a Coast Guard plane flew over the island to drop a note warning the team of storm conditions and advising that they leave the island post haste. Arrangements were made for the boat to return next morning and all the off-duty operators began the job of packing up the station while the rest kept making as many contacts as possible.

By next morning, when Orca arrived, the winds and tide were too dangerous for her to come in closer than 600 metres from shore, and loading was attempted with a small dinghy in the rough seas. The captain decided this was too risky, so the majority of the equipment was abandoned on Desecheo, hopefully to be picked up a few days later when the weather calmed down.

The gear was in fact collected the following day. 7000 QSOs were made in all over three days...yet another expedition which found that nature likes to teach radio amateurs who's boss. (From a QRZ-DX adaptation of an article by Carlos NP4KA).

Vatican HV2VO

Worked HV2VO on CW on 40 or 20 metres lately? Bad luck...it's a pirate according to the owner of the call, Father Edmund Benedetti, who says:

"I regret to say that there is a Roman station impersonating my callsign mostly on CW (which I never use) on the 7 and sometimes 14 MHz bands. I got QSLs for CW QSOs on the following dates: September 25-27 and October 2. If I have a guest transmitting on CW I shall mention the fact on SSB at the same period."

NEWS FROM P29JS

14220 net

With the increased daily activity with Kirsti and I, the net is very active. Virtually no U.S. stations are heard at net time but this will change in coming weeks. There have been a number of excellent check-ins and as usual a fair amount of DX contacts made, VK, ZL and Pacific stations being assisted.

Incidentally the 220 Net can claim a unique situation where ALL of the Current BY stations have now checked in. BY5RA is on each week on a Thursday and now has his rig repaired. The following have checked in: BY1PK ... BY1QH ... BY4AA ... BY5RA ... BY8AA.

It is very noticeable that the operators are very polite and there is no doubt that through amateur radio they are giving the Peoples Republic of China a superb image.

Those of you who have received the BY5RA card showing the Panda ... do you agree it is a delightful QSL card? QSLing from the BY stations continues to be fast and efficient.

Pitcairn Island

A new regular on 14220 is Kari VR6KY. The visit by the Norfolk group is now history. One result of the visit has been a number of visitor-induced aches and pains and illnesses. Such a small isolated community really has very little immunity to many of the bugs and wogs we carry about so cheerfully. QSL Kari to LA7JO.

Somalia

Jakka has been very active from this rare spot. He is operating from Mogadishio as T52JL and he has a very good signal. Due to work load he is limited to operating after normal work hours. By the time you read this he will be QRT and QSLs should go to his home call OH2JL.

Incidentally, word is that his licence was signed by the President. I hope he is the licensing authority!!!

India

It is noticeable that there are many VU stations active these days and quite a few are DXers. After the tragedy of a month or so ago they were silent for a couple of days. The new Prime Minister is a radio amateur and may we as fellow amateurs wish him every success in his task ahead.

Brunei

Hasan V85HG continues to be active and has promised to come on the 14220 net in the near future. His QSL route is P.O. Box 222, B.S.P., BRUNEI, Island of Borneo.

Chad

In a latter from Serge F6BFN he tells me that he was unable to get the final approval which would satisfy ARRL. It is a great shame really since so many Pacific stations made the QSO as a result of daily skeds with Serge.

Jackie TT8CW continues to come up each week on 14220 and although the conditions are not the best many have made the QSO. Let us hope that Jackie is luckier with his documentation.

St Helena

Another welcome check-in has been Julian ZD7CW. I was delighted to help him with BY5RA. He had a very solid QSO with Lin. QSL info is via N4CID.

Niger

The permit letter regarding 5U7LD has been received here. This was submitted to ARRL as documentation. The important thing to note is that it is a letter from one country (Nigeria) attempting to authorise an operation from another quite unrelated country. Needless to say, despite comments on the band, I agree that it is reasonable that ARRL did not accept this letter as authorisation or adequate documentation.

U.A.R.

Who says DXing isn't fun. There is always something around the next corner. The appearance of A61AA created quite a stir. At present I have no doubts that he is genuine and this operation has been anticipated for some time. I will leave further comments till next report, but as a very inexperienced operator. He has a mammoth task ahead.

The other night he was simply driven off the band — in a situation like this he must go split and at least give himself a chance. Time will tell.

China

Call sign Allocation adapted from information in the DX Family News Letter.

1AA-ZZ Beijing Shi	6RA-ZZZ Hubei
2AA-IZZ Heilongjiang	7AA-IZZ Hunan
2JA-QZZ Liaoning	7JA-ZZ Guangxi
3AA-FZZZ Tianjin	7RA-ZZZ Guangdong
3GA-LZZ Nei Mongol	8AA-IZZ Sichuan
3MA-SZZ Hebei	8JA-ZZ Guizhou
3TA-ZZZ Shanxi	8RA-ZZZ Yunnan
4AA Shanghai Shi	9AA-FZZ Ningxia
4JA-QZZ Jiangsu	9GA-LZZ Qinghai
5AA-ZZZ Zhejiang	9MA-SZZ Snaanxi
5JA-QZZ Jiangxi	9TA-ZZZ Gansu
5RA-ZZZ Fujian	0AA-MZZ Xinjian
6AA-IZZ Henan	0NA-OZZ Xizang (Tibet)
6JA-ZZ Amhui	

Nepal

It is always easy to forget just how important the activity of station and operator may be for that needed DXCC country. Couple that activity with good QSLing and it makes a big difference. In working 9N1RN the other evening I was reminded of the work done by Father Moran 9N1MM. He is at present visiting the USA. Hurry back, we miss you. QSL Kristna to Radio Nepa, Katmandu, Nepal.

Philippines

Special call DX1A ... QSL this station via P.O. Box 426, Manila.

French Guiana

FY7AU has been active on the Net and his QSL route is P.O. Box 999, Cayenne, 97300 French Guiana.

Note

The correct QTH for F6GXB is as follows: Jacques Calvo, P.O. Box 70, 91605 Savigny Cedex, France.

Belize

V3ZZ has been on the net recently and has the following QSL info. His manager is KE5KK but Mike appears in the call book under his previous call KA5ORN ... gets a bit confusing at times.

Minami Torishima

... and Ogasawara. KD7P/KH2 was active from each location towards the end of November and beginning of December. Call signs were KA2IJ for Minami Torishima and KA2MR for Ogasawara. Old timers will remember these locations better as Iwo Jima and Marcus Island respectively.

Sao Tome

The suggestion that PS7ABT/S9 should go all the way to S9 land and operate for three hours seemed ludicrous. It now appears that this was an /MM operation and will count for nothing. However the big mystery is what has happened to WB7FRA?

Bhutan

A number of rumours around regarding possible operation from A5. It seems a long time ago since Pardhan was reasonably active and with a bit of application and band searching Pardhan seemed always available. For some time now nothing has been heard from A51PN. Activity was expected by JH1WXH due to visit Bhutan a couple of weeks ago. It is not certain whether the authorities are interested in granting a licence to outsiders. We shall see.

K4YT

Like everything else it is always great to talk with someone who has the same interests as oneself. It was nice to finally meet Karl Renz for the first time, although we have touched base over the years. Many will remember Karl in the Indian Ocean among the 3B8, 3B9 and so on. I was able to assist Karl to get P29YT for his use in PNG and I think many had a surprise when Karl ran the 220 net. He did a fair bit of operating from my QTH and he is due back again in a few months' time. In the meantime his base is in Manila and he has a fair amount of travelling to do around the area.

Kure Island

Rick KH6JEB is back on Kure Island for a spell signing KH7 and he is very popular in Europe. It is often difficult for us here in the Pacific area to realise just how hard it is to work some of these Pacific Islands. Kure,

away, the Carolines and so on are always the targets for the European DXers. QSLs to Ricks call book address in Hawaii.

Nando De Noronha

PYOFF showed up on the 14220 net several times and many got the QSO. He was always pretty weak here and it was thanks to us that many got through. No doubt about Norfolk Island is a good radio spot. QSLs to PY2AJK.

inidade

Hot off the press is the possibility of a weekend of operation from this rarish spot. Projected call sign is PYIVYO/PYOT and I think we will get a check in to 14220. Further details next time if this one shows up.

ne Gambia

This country continues to be available with another C5 station, C53BI, checking in to the net the other day. Ray has promised to keep an ear open for VK,ZL and the Pacific areas.

pper Volta

As mentioned previously it is always easy to take something for granted when it is around almost every day. Enno XT2AU was one of these stations and he was missed when he finally left some months ago. With XT2BR checking in the other day it is nice to be back in touch with XT2 Land. QSL to P.O. Box 116, Quagadougou, Bourkina Fasso (Upper Volta), West Africa.

5 Metres

This band continues to offer some very pleasant surprises. Tuning over an apparent-dead band, suddenly the S-Meter goes to line Plus... local P29, JA? Don't you believe it, I've worked CN8EL, 5Z4PR, J28EB, S7VR, FR7CP, 8Q7AV, VQ9YB, several A4 stations and so on. All these at around 100/1200 UTC.

Macquarie Island

I was very fortunate to work all of the four operators at present on Macquarie. They have got the antenna problems sorted out and promise lots of activity. Graham VKOGC is coming up each week on 14228 on a Saturday at 0700 UTC.

This Island is always in great demand despite reasonable activity in recent years. Denise VKOYL has also promised to check into 14220 as things settle down. QSL VKOGC to P29JS. VKOYL to VK3AH.

Mongolia

Chandra JT1AO is a regular on the net these days and has made some good QSOs. He has certainly put Mongolia on the map and is very workable on the various bands. He likes 80 and 40 metres. QSL to BOX 444, Ulan Bator — 13, Mongolia.

South West Africa

Gerd ZS3GB is another regular these days and usually has a very good signal on the long path. There appears to be a problem with his usual QSL route of manager NOAFW so Gerd is requesting cards be sent direct to him at P.O. Box 1165, TSUMEB, S.W.A.

Ethiopia

A few nights ago on 20 metres I was amazed to hear ET3PG calling CQ. The resulting QSO was a mirror image of my first QSO with this station several years ago. This first contact was made a few hours after they appeared on the band. Bekele was very good copy here but QRM quickly took over. No doubt about it, some of the behaviour leaves a bit to be desired. Bekele requests cards to P.O. Box 22976, Addis Ababa, Ethiopia.

Cambodia

Continues to be active and XUISS operated by YL operator KIMSAN was in great demand the other evening on 20 metres. Very strong here and located in Nong Chan Camp. QSL route is JAHQC.

Iraq

It was good to work YIOBIF the other day on 20 Metres. This special call was being used by Ali from an International Trade Fair in Bagdad. QSL route is YIOBIF, Bagdad International Trade Fair, P.O. BOX 5864, Bagdad, Iraq.

YIIBGD continues to be active and I received a very quick QSL card from Saad for a recent CW contact.

Aves Island YVOAA

Well Kirsti tells me that the QSL cards have arrived safely, so I am happy about

that. The word is that the Radio Club of Venezuela has stated that only QSL cards signed by QSL Manager YV5HUJ will be the ones to be official confirmations for the YVOAA expedition.

ARRL

Has now approved an endorsable DXCC for Top Band — 160 Metres. This is long overdue. Effective date is November 1984 and contacts from 15th November 1945 will count.

Mozambique

Still hopeful of this one being available soon as AB4Y is in position trying to get formal permission to operate. Requested calls are AB4Y/C9 or C90A. He is an American diplomat and there for some time.

St Kitts/Nevis

The call sign block of V4A to V4Z has been allocated so we will shortly hear this prefix on the bands — probably starting in the new year.

Yemen

There is still a good chance of this very rare country being on the air soon. The station will be operated by a Yemeni National and OE6EEG (Salim) hopes to eventually operate the station also... we shall see.

VHF-UHF SCATTER

Continued from Page 65

0933z VK3XCX and VK7s worked VK2BA. VK2AKU worked VK6RTU 0127z, VK7ZOO 0838z and VK7AL 0844z, ZL2TPY 0703z, VK7CV 0810z, VK7JG 0822z.

28 Nov: A few VK4s and ZLs into Sydney.

30 Nov: VK2BA worked ZL3TIC, ZL4CN, ZL2CD, ZL2OS, ZL1AKW and ZL7OY 2217z. Heard ZL TV 50.750 and ZL beacon 51.250 MHz. VK4ALM worked ZL1 and VK1 0018z. The band then opened to Chris ZL7OY again this time with 5/9 plus 20-30 dB signals, worked by 3AMK, 3AZY and others. This lasted about five minutes. VK2AKU worked VK4HT 0042z, ZL1F 2300z.

02 Dec: VK7JG worked by VK3XQ, 3AZY and others on tropo 0028z. VK3KAQ worked ZL4AS 0355z. VK4, VK7 worked into Sydney. VK2AKU worked VK4AFC 0016z.

04 Dec: VK2BA worked ZL1AWU, 1AON, 2KT and 1TRM.

05 Dec: VK2BA worked ZL1ADP 0102z, FK8EM 0110z, FK8EB 0830z.

06 Dec: All ZL districts 1-4 worked in Sydney 2100z.

07 Dec: ZL2TPY, 1ADP, 2CD, 1BHV worked by VK3AZY/P at VK3XQs shack 2216-2228z. VKOCK worked by VK3XQ 0750z and lots of VK2s. Heard VK3XO work ZL2AQR 1035z. VK3AQR worked

ZL7OY 0748z. VK3AZY worked ZL3TQJ, 3TIC, 2AQR between 1055-1137z.

08 Dec: One of the longest ZL openings into VK3 ever! It started around 2130z with ZL TV and finished about 1145z. All districts were worked, and ZL7 heard, and if this wasn't enough David VKOCK was worked by VK1, 2, 3, 4, 5, 7 plus ZLs over a period of about 5 hours. All stations on the band who waited worked David including VK3BDL/M and VK3A-ZY/M plus stations with as low as 200 mW of power. David worked as far as Rockhampton VK4GM, 4PZ. Lin VK4ALM gave it away and went to bed! Stations heard and worked include ZL1BHV, 2TLF, 1BHX, 2CD, 1AKW, 3TJD, 4AI/P, 4TBP, 3OF, 3TIC, 4CN, 4LV, 7OY 0025z (ZL7OY worked into ZL4CN, 4PG, 4LV, 3ADT 0029z). All stations being heard in VK3. ZL2BIW, 4AS being the last at 1140z. Excellent backscatter was heard from VK1, 2, 5 and 7. I have never heard such QRM. We also had VK7IF, 7RR in on sporadic-E around 1020-1035z. What a day. Let's hope we have a lot more like it. David VKOCK did an excellent job.

09 Dec: Heard VKOCK/B 0130-0440z in and out of the noise. The beacon was also heard in VK2.

There's a lot more news to tell you but that's all we have room for this issue. Hopefully we'll be able to find some extra space next issue to fill you in on what was happening in ZL at this time as well as the news above 2m where some activity has also been noted.

CONTEST CALENDAR

Competition on the air

Martin Luther VK5GN

P.O. Box 931,
Adelaide 5001

Coming Events

JAN 12/13 — "73" 40 & 75 SSB Contest
JAN 12 — Hunting Lions On The Air
JAN 19/20 — "73" 160 SSB Contest
JAN 25/27 — CQ World Wide 160 CW Contest
JAN 26/27 — Victorian 150th Anniversary contest
JAN 26/27 — "73" 15 & 20 SSB contest
FEB 16/17 — AEBL DX CW Contest
FEB 22/24 — CQ WW DX 160M SSB Contest

Correction

I have received a letter from Chris VK3FY who, as the secretary of the South Pacific Contest Club, tells me that I was wrong in ARA Vol 6 No 13. I have reproduced below his comments and the offending paragraph from my column.

Chris writes: "During the 1983 All Asian CW contest a number of amateurs participated in the test. When the results were announced in ARA, the list of members taking part was incorrect. The operation was for the Eastern Mountain Districts Radio Club and by its members with two guest operators. None of the members of the DUDX'ers claimed the event as such and were participating as EMDRC. Due to the remarks of the column, this club no longer wishes to enter or participate in contest activities."

My column said: "In the CW contest, Australia took off the continental leader award for Oceania with VK3ER scoring 203,830 points in multi-multi category, VK3ER is the callsign of Eastern and Mountain Radio Club but was operated by three members of the DUDX contest club and one EMDRC member. The team was VK3DXI, VK3FY, VK3CCD and VK2CIA."

You can judge for yourself. If you think I was in error then consider it corrected. This column can only be as reliable as the information it receives. I would further make the point that if anything I say in this column causes anyone to give up contests then in one sense I am sorry. However, in another sense I really could not care less. Contesting requires a high degree of persistence and if you easily give up then you will never get to see your name in print (correct or incorrect).

I suspect in this case that as the communication came from other than EMDRC that there is more to this than meets the eye. EMDRC is, I know, a very successful and well run club. They are big enough to stand up to anything I might say. If they have decided not to involve themselves in contests I hope that

CQ WW DX CW CONTEST 1983

(CALLSIGN, BAND, FINAL SCORE, QSO'S, ZONES, COUNTRIES)

SINGLE OPERATOR

AUSTRALIA

VK2BQQ.....A.....	516,146	886.....	84.....	122
VK3AEW.....A.....	242,684	501.....	70.....	99
VK5GZ.....A.....	59,793	220.....	44.....	58
VK2DID.....A.....	32,573	181.....	25.....	36
VK5KL.....A.....	1,200	16.....	11.....	14
VK4XA.....28.....	65,559	588.....	18.....	23
VK6NCW.....21.....	54,417	362.....	19.....	32
VK5AGX.....14.....	107,780	437.....	27.....	58
VK6AJ.....14.....	56,006	241.....	30.....	52
VK3FY.....14.....	25,968	159.....	22.....	26
VK6RZ.....7.....	20,855	168.....	20.....	23
VK6HD.....1.8.....	4,440	47.....	15.....	22

FRENCH POLYNESIA

FOOJO.....A.....	1,493,152	2181.....	91.....	141
FOBJP.....A.....	205,200	929.....	30.....	45

GUAM

GD7P/KH2.....A.....	574,332	1496.....	36.....	96
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HAWAII

KH6WT.....21.....	71,690	375.....	25.....	42
KH6ILA.....1.8.....	999	40.....	6.....	3

INDONESIA

YC0UM.....A.....	1,127,705	1843.....	66.....	139
YB5ASO.....A.....	1,021,154	1243.....	95.....	186
YB2ARH.....A.....	253,510	1010.....	85.....	166
YC2BDJ.....A.....	47,530	180.....	38.....	59

OGASAWARA ISLAND

JA0SWT/JD1.....A.....	47,360	434.....	42.....	38
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PHILIPPINES

4D1RU.....21.....	185,185	817.....	28.....	49
DU1TV.....21.....	28,530	219.....	17.....	28

MULTI — OP SINGLE TRANSMITTER

AUSTRALIA

NEW ZEALAND

ZL1BEK.....A.....	111,618	480.....	26.....	52
ZM3AGI.....14.....	82,215	453.....	23.....	40
ZL1AMO.....7.....	279,672	1098.....	26.....	60
ZM2AH.....3.5.....	3,060	63.....	8.....	7

NORFOLK ISLAND

VK9NL.....A.....	1,093,542	1808.....	84.....	129
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NIUE ISLAND

ZK2KM.....A.....	802,692	1391.....	85.....	113
VK2WU.....	1,761,375	2486.....	95.....	180
VK3BUR.....	230,575	677.....	49.....	66

FRENCH POLYNESIA

FO8FW.....	958,410	1433.....	95.....	135
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HAWAII

AI6V/KH6.....	2,051,308	2837.....	104.....	140
AH6AZ.....	1,586,015	2298.....	100.....	135

MULTI-MULTI

AHOC.....	6,877,750	5164.....	149.....	302
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by change their minds. I seem to have a vague recollection that they used to produce some superb field day results but then again I may be wrong.

Results

Let us get on to more interesting subjects. Some preliminary results are through for the 1984 CQ WPX Phone Contest number one single op all band in the world was Les K2WU. A really fine result and proof again that the WPX contest is one that can produce excellent results even from down here in Southern Oceania. At least here is one contest that is not monopolised by the Caribbean stations. To reinforce that point VK6DU was number eight in the world operating multi — single.

FOOJO operated by Jay W6GO was top Oceania but his score did not even put him close to the Caribbeans. VK4XA put in another creditable performance to be number six in the world on mono band ten meters. The AH0C score was number five in the world.

160 Metres

The low bands contest season is with us again and as the sunspots go down it seems logical that activity on the low bands will increase. I am quoting now from Frank Anzalone W1WY long time contest editor for CQ magazine in the States.

"When we organised the first CQ 160 metre contest some 25 years ago, the band was practically deserted and QRM was no problem. In later years as the band became more active and other organisations sponsored top band contests, it became evident that a plan was needed if we (the USA) were going to work the weak overseas DX stations. That is when "Mr 160", Stew Perry W1BB came up with the brilliant idea of the DX window making 1825 to 1830 kHz off limits to stateside and VE stations during the hours that the band was open to DX. DX stations would make their calls in the DX window and listen for an answer down in the lower portion of the band. This eventually worked out successfully if and when stateside stations co-operated.

"Last year in CQ's 160 contest it became evident that it was also necessary for DX stations to observe the DX window operating plan. Certain DX stations solicited on frequency contacts in the window, and the resulting pile-up made it almost impossible to hear the weaker dx stations trying to establish a split frequency operation.

Continued page 65

1984 ARRL DX CONTEST — PHONE

(CALL, SCORE, QSO'S, MULTIPLIERS, POWER (A =less than 10W, B=11-200W, C=MORE THAN 200W), BAND)

OCEANIA

KJ9W/KH2	21,516	183	44	B	All
AH6BK	13,392	124	36	C	160
AH6AZ	28,896	224	43	C	80
KH6IJ	10,302	101	34	C	80
K9RA/KH6	194,934	1226	53	C	20
W7PSO/KH6	13,608	126	36	B	15
KH6XX	469,053	2743	57	C	10
VK2WU	2,454,543	3367	243	C	All
VK1LF	4,134	53	26	C	All
VK5BW	4,941	61	27	C	80
VK3DMU	149,730	805	57	B	20
VK5ARO	49,407	383	43	C	10
VK2PMC	32,868	249	44	A	10
YB0ARA	281,030	791	110	C	All
ZL1M	20,862	122	57	B	All
3D2DX (VE5RA)	2,177,250	2903	250	B	All
5W1ER (K2FJ)	22,410	166	45	B	All

MULTI OP SINGLE TRANSMITTER

DX7DX	153,468	588	87	C	All
H44R	2,314,515	3283	235	C	All
ZL2AH	473,400	1052	150	B	All

"We now feel that the situation is getting out of hand and more drastic measures are necessary. In our contest this year, on frequency contacts made between 1825 and

1830 kHz will have no scoring value during the hours the band is open to DX. Stations that consistently ignore this regulation will be cited and will be open to disqualification.

1984 ARRL DX CONTEST — CW

OCEANIA

DU6JM	60,048	278	72	C	A
N7ET/DU6	26,730	162	55	B	A
K7SS/KH6	1,079,299	1579	227	A	A
KH6WT	32,805	243	45	B	15
W7PSO/KH6	330	11	10	B	15
KX6DS (K4TO)	59,094	402	49	B	40
VK3DXI	679,875	1225	185	B	A
VK2BQQ	235,092	548	143	B	A
VK2GW	121,368	389	104	C	A
VK3AEW/1	30,528	159	64	B	A
VK3DNC	17,010	105	54	B	A
VK3AGX	26,676	288	39	B	20
VK3FY	10,080	105	32	B	20
VK4ANY	6,930	77	30	B	20
VK2WU	21,867	197	37	C	15
VK4XA	21,423	193	37	B	10
YB0ARA	14,994	147	34	C	A
YB2ARH	11,760	98	40	B	A
ZL0AJW	1,086,825	1685	215	C	A
ZL1AIZ	8,184	88	31	B	40
5W1DC	622,914	1054	197	C	A

MULTI-SINGLE

AH6AZ	1,288,656	1884	228	C	A
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MULTI-MULTI

ZL2AH	71,712	249	96	B	A
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The NOVICE DX AWARD

OBJECTS

1.1 This Award was created in order to stimulate interest in working DX by Novice Amateur stations in Australia and to give successful applicants some tangible recognition of their achievements.

1.2 This Award to be known as the **NOVICE DX AWARD** will be issued to any VK Novice Amateur station or a station operating in a previously Australian administered Territory, who satisfies the following conditions.

1.3 A certificate of the award will be issued to applicants who show proof of contacting all the following.

(a) Ten (10) countries outside Australia

(b) Ten (10) prefixes from the same country outside Australia. These prefixes **MUST** be similar, starting with the same letters, e.g. W1 to WO, WA1 to WA0, WB1 to WB0. JA1 to JA0, DJ1 to DJ0 etc.. Mixed prefixes are not permitted.

(c) Ten (10) zones (as defined for the Worked All Zones Award) Certificates will be endorsed as neces-

sary for contacts made using only one type of emission and/or for only one band

REQUIREMENTS

2.1 Verifications are required for the stations worked. The ten countries must be listed in the **AMATEUR RADIO ACTION DX COUNTRIES LIST**.

2.2 The commencing date for this Award is September 1st, 1978. All contacts made on or after this date may be included.

OPERATION

3.1 All contacts must be made with amateur stations working in the authorised amateur bands.

3.2 All contacts must be two-way contacts on the same band. Crossband contacts will not be allowed.

3.3 Contacts may be made using any authorised type of emission for the band concerned.

3.4 Credit may only be claimed for contacts that use regularly-assigned Government call signs for the country concerned.

3.5 Contacts made with ship or aircraft stations will not be allowed but landmobile stations may be claimed provided their specific location at the time of contact is clearly shown on the verification.

3.6 All stations must be contacted from the same call area by the applicant if the applicant's call sign is changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area.

3.7 All contacts must be made when operating in accordance with the Regulations laid down in the Handbook for the Guidance of Operators of Amateur Wireless Stations or its successor.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

4.3 Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location of address of the station at the time of contact.

4.4 A check list must accompany every application setting out

(a) The applicants's name, address and callsign.

(b) The details of each claimed station in accordance with the details required in Rule 4, 3.

4.5 In lieu of forwarding QSL cards or other written evidence as set out in rules 4.1 to 4.4 above, a list giving the details set out in Rule 4.3, certified by two licensed full-call amateurs known to the applicant should accompany each application for the Award.

APPLICATIONS

5.1 Applications should be addressed to The Awards Manager, Amateur Radio Action, 250 Spencer Street, Melbourne, Vic. accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if required.

5.2 A nominal charge of \$1.00 or such other amount as may be determined from time to time which shall also be forwarded with the application, will be made for the issue of the certificate.

5.3 Successful applicants will be listed in **AMATEUR RADIO ACTION** periodically.

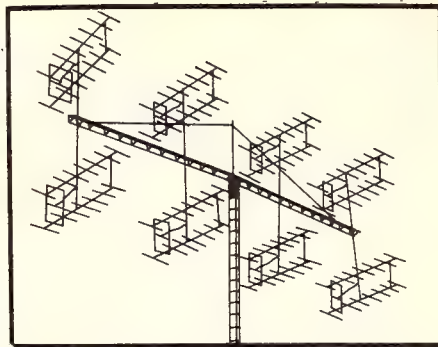
5.4 In all cases of dispute the decision of the Awards Manager and the Editor of **AMATEUR RADIO ACTION** in the interpretation and application of these Rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules **AMATEUR RADIO ACTION** reserves the right to amend them when necessary.



VHF/UHF SCATTER

with Jim Hunt VK3AZY



Six Metre News

This month started off very well with plenty of Sporadic E. It looks like the start of a very interesting summer.

Please keep 52.050 MHz free for DX calls! At times I have heard up to three separate QSOs going at the same time on 2.050! So please make the contact and reply. Many of us had trouble during the opening to ZL70Y with people calling CQ and having contacts while Chris was working VK3s.

3 Nov: VK2EEC worked ZL3AFN 0814z. VK2XJ worked VK5ZRO 0826z. VK3CKI into Sydney 0826-1000z; VK3, VK5 and ZLs into VK2. In Melbourne we worked VK2XDH, VK4NW, VK2AKU, VK4ALM and VK8TM from 0840-1008z. Brian VK2AKU at Narrabri worked VK7CV, 7ZOO, 7ZIF, 5AXM, 3XQ, 3AZY, 5KPJ, 5ZRO, 5KBA, 5LP, 5RO, 5AZM and 5QM from 0755-1052z.

14 Nov: At 2240z FK8AX worked into Sydney. VK4JXZ and VK9ZA worked VK2BA and others between 2250-2334z. VK9ZA worked VK1 & VK2, northern VK3 & VK5 at this time. At 1055z VK7s worked VK2.

15 Nov: VK2BA heard YJ8RG weakly at 0130z. ZK2SIX/B up to S9 until 0630z. FK8EB 0250z. ZLs all day. Worked ZL1ADP 2234z. ZL2 & ZL3 in for one hour. VK2AKU worked VK7ZAR, 5ZRO, 3XQ, 7CV & 7ZIF from 0127z until 0917z. VK4ALM & VK4ZJB worked FK8 2230z. VK3XQ heard VK9ZA work VK3CI 2355z. Worked YJ8RG 0209z, FK1TK 0219z, heard VK2 work VK7, worked VK4TKA 0402z, 4RO, 4ALM. VK6HK and 6XJ worked VK9ZA on 52.050 MHz; in for one hour.

16 Nov: VK2s in Sydney worked ZL1, 2 and 3 at 0030z. VK9ZA worked into ZL and VK4. VK2AKU worked ZL1AON, ZL1TOP at 0138-0144z.

17 Nov: VK5ZDR and 5ZRG worked JH4JPO 0315z on 52.050 MHz. VK2AKU worked VK4SXZ, 4FZZ at 2307-2309z, then VK9ZA 2347z, JA2DDN 2355z, VK4FXX 0056z, VK6WD 0102z, VK6IV 0112z, VK4AFC, VK9ZA again, VK6XV, VK4JXZ, VK4TKA, VK6ZXC, VK6HK, VK6BA and VK6VP between 0134-0302z with FK1SB at 0915z and VK2KAY 0916z on tropo.

18 Nov: VK4ALM, VK4FNO, VK4TKA, VK4FXX, VK4ABP into VK3 at 0245-0335z. P29BPL into VK4 2240-2300z. At 0300z JH4JPO into VK2. VK2AKU

worked VK8TM, VK8KTM and VK8GF between 1012-1115z.

19 Nov: VK4TKA into VK3 0900z. VK2AKU worked VK3AOS, 5ATD 0914 to 0932z. VK5s into Sydney at 0830z for one hour.

20 Nov: VK2BA worked VK4ALM 0230z, then at 0330z ZL1, 2 & 3 in for one hour.

21 Nov: 0155z VK1ZQS worked by VK3XQ on backscatter. VK4ABP, 4KHZ, 4ZAL worked by VK3AZY/P 0316-0327z. Rob VK3XQ worked VK4JXZ, 4YFW/M 0156-0228z and heard VK4JH working into VK6. VK4KHZ worked VK6, VK6 and ZL today. Heard VK4TKA, 4ABP/B, 4ALM, 4ZWH and 2AKU 0802-1018z. In Sydney 2250z VK4s, 2320z FK8EM, FK8AX worked VK2XJ and ZL3. 2313z VK5s and ZK2SIX/B for four hours at 5/9 plus, then 2319z VK4s. VK2AKU worked ZL3TIB, ZL2TDC, 1BHV, 2QS, 2AAA, 2AQR, 2TPY, 2UUI, and VK2XJ tropo, VK7ZIF, 5AT, 6ZRY, ZL3TIC, ZL1AKW, VK7ZIF, 7KJ, 3ZFA, 5ZGY, 3AMH and VK7WP between 0756-1107z.

22 Nov: The band was open all day from Melbourne starting with VK4ZAZ, 4ALM, 4ABV, 4FNO 2222-0235z, then VK4XQ, 3AMK heard at 0420z JK1BCK, JG2CAW, JR2, JA4MBM and a JE7 until 0440z signals very weak. VK4ZAZ, 4ALM, 4ABV worked by 3AZY/M 2222-0125z. P29/B heard by 3ZFA 0500z. ZK2/B heard 3CDI about midday. VK8TM, 8KTM heard 1117-1120z. Very strong VK6s 0316z into Sydney. ZL3NE/1 worked 0419z with VK8GF at 0225z. VK5KBU with 5RO, 5ZRO worked by VK2AKU 0115-0151z. VK2BA worked VK4ZAZ 0100z and 4RO 0108z, FK1SB 0115z, heard ZK2SIX/B 0300-0400z. VK2VC worked JG2HPG, JG2COF, JA9CMR around 0430z. Worked by 2BA, VK8GF, 8TM 0740z.

23 Nov: VK2AKU worked VK7ZJG, 7AN, 5ZRO, 5NZ, 3XEX, 5ZAX from 0906z until 1047z. VK4FNO, 2AKU, 4ABP/B around 1106z into VK3.

24 Nov: VK7 and ZL2 into Sydney 0800z for one hour. Heard VK4RO, VK4FNO, 4ABP/B, 4ALM from 2227-0200z. ZL TV heard by VK3AQR 0000z. VK3BDL heard it 0700-0730z. Heard VK2RGB/B 0700z, worked VK8GB at 1138z.

25 Nov: VK2AKU worked FK8EM 0245z. VK4KHJ, VK4KIT, 4KAA, 4RO, 8TM, all morning with 4ABP/B, 4ALM into VK3. VK4ALM worked A35RS at 2340z plus

two FK8s and two FK1s. VK1VP also worked A35RS around 0005z.

26 Nov: VK2BA worked ZL1, 2 and 3 0630z. VK2AKU worked VK7JG 1202z with VK7IF.

27 Nov: Strong VK4s into Melbourne 2300-0200z. Heard VK2KFB 0905z, 2KIC 0944z. 2200z VK4s into Sydney. VK9ZA heard, FK8EB worked 0100z.

Continued Page 61

CONTEST CALENDAR

Continued from page 63

This applies to both Stateside and Overseas stations."

I wholeheartedly endorse Frank's remarks. If you are using 160, the DX window is there to help so use it wisely. Split frequency operation is a must if the weaker stations are to be heard. Get those long long wires tuned and the verticles peaked and go on top band!!!

The Caribbean and South American dominated the top ten results but **VK2WU** and **3D2DX** just pulled Oceania in with **VK2WU** ending up on top in this continent and number eight in the world with **3D2DX** number ten in the world. Great result.

KH6XX came in number two in the world for his fine ten metre mono band effort. **AH6BK** was world number one on 160 metres mono. **VK2PMC** gets a certificate for top Oceania QRP station.

Some good results but really quite a disappointing entry from Oceania, you can't win the paper if you don't put in an entry. I was moving house at the time of this one but then QSO's from my mobile rig on 40 would have given me top Oceania on that band!!!!

In the mono band efforts **VK4XA** won Oceania on ten and was also number four in the world. **VK3AGX** took out the prize for top Oceania on twenty. Again no entries on 160 or 80 meant that there was no Oceania winner.

ZLOAJW took the top Oceania award for single op all band. It is interesting to note that the winner of QRP section, **K7SS/KH6**, was only 7,526 points behind the full power winner. That's less than 1% of the winners score, he did in fact have more multipliers than **ZLOAJW**. Says something about the relative locations!!!

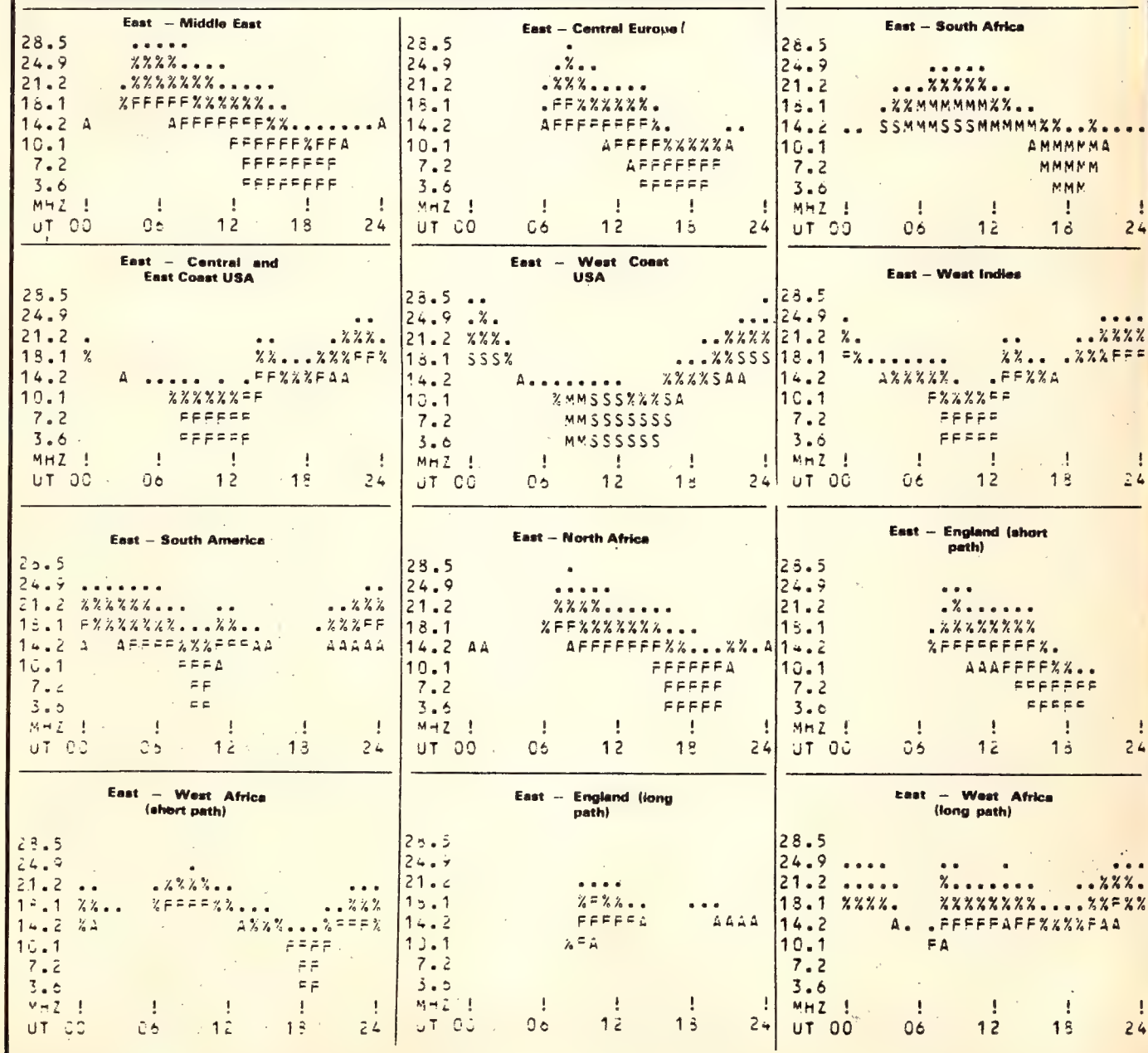
There are two VK stations with Power Rating C. Take care fellows that should be **DISQUALIFICATION** for breaking amateur regulations. Maybe I am wrong but on CW the rules seem quite clear on power levels permitted.

Propagation Forecast

These GRAFEX style predictions present in pictorial form the expected HF propagation conditions between Australia and a number of important DX areas. For each circuit, the "East" terminal refers to the eastern half of Australia and "West" refers to the western half of Australia. The horizontal axis of each graph represents the hours of the day in Greenwich Mean Time from 0000 hours to 2300, reading left to right. The vertical axis represents increasing frequency.

A GRAFEX symbol represents the predicted propagation conditions for a particular frequency at a particular time. The meaning of each symbol used is given in the key on the next page. The letter "F" designates the best conditions for HF communications.

Grafex prediction charts supplied courtesy of the Ionospheric Prediction Service, 162-166 Goulburn Street, Darlinghurst, NSW. IPS offers pre-recorded telephone information. To access the service, please phone (02) 269 8614.



Shortwave

Frequencies are in kiloHertz. Times are given in Universal Time (UTC) and to convert this add 11 hours for Eastern summer time, add 10½ hours for Central summer time, or add 8 hours for Western summer time. Add 13 hours for New Zealand summer time.

UNUSUAL DAYTIME SIGNALS A HIGHLIGHT

Some rare DX has been audible on some of the lower frequency international short-wave bands recently, with regular reception of daytime Asian signals a highlight.

Listeners normally can't expect to hear many signals from Asia during our daytime period between 0200 and 0600, especially on bands like 31 and 25 metres (9 and 11 MHz). In recent weeks though, signals such as Singapore Broadcasting Corporation on 11940 have been heard regularly right through the day. Other regular signals on 25 metres have been Voice of Free China in Taipei on 11860, often well heard from about 0400 to sign-off at 0600, as well as the Far East Broadcasting Company in Manila on 11890 after about 0500.

An indication of current propagation conditions can be gained by comparing the signals of Taipei on 11860 at about 0430, with those of Voice of Free China's relay broadcast via Family Radio in Florida which operates on 11740 in Spanish, at the same time. The Taipei signal on 11860 must travel via an all-daylight path, while the 11740 broadcast from Florida has the advantage of a good deal of darkness on the transmitter end of the propagation route over the Pacific. On a band like 25 metres, you would expect the Florida transmitter to give far better signals into Australia at 0430. However, at present the Taipei outlet of 11860 is often better heard than is the broadcast from the Florida relay!

This same pattern can be noted in our mornings, with often good signals across the daylight Pacific path from the Americas on 11 MHz, while signals from Europe on the darkness path across Asia are often patchy.

Experts on radio propagation could no doubt explain this best, but I'd guess that this sort of reception pattern is a product of the declining sunspot count. This has produced a big drop in the lowest useable frequency stations can use on daylight paths. At the same time, the sunspot downturn means the highest frequency stations can reliably use during darkness hours has also dropped. As a result, even bands like 11 MHz (usually a band which gives reliable performance across lengthy darkness routes) can prove to be too high for consistent DX over great distances.

INTERNATIONAL LISTENING GUIDE UPDATE

Last issue, I mentioned the very good publication available from Germany, called the



"International Listening Guide". Since then, the price of the "Guide" has been increased. It now costs \$A10 for an annual subscription, which means you get a new edition soon after the start of each new transmission period in March, May, September, and November. The International Listening Guide is probably the most comprehensive, up to date publication covering international short-wave broadcasting frequencies I've seen, and as such is highly recommended!

TIME CHANGE FOR TURKEY

Shortly after compiling last issue's column, a new schedule was received from Ankara which shows all Voice of Turkey's English broadcasts to be on air one hour later.

This means the English programme previously scheduled for 0300 now starts at 0400, the 2000 programme is now at 2100, while other English programmes now go to air at 2300 and 1330 daily.

Frequencies used for each of Voice of Turkey's English broadcasts remain as given last issue, and each broadcast is of approximately 50 minutes duration. Best reception is usually during the 2300 programme.

AUSTRIA MOVES ALDRANS TRANSMITTER

Austrian Radio has transferred their low-powered shortwave transmitter from Aldrans in the Tyrol region near Innsbruck to the main shortwave transmitting centre at Moosbrunn.

The 10 kiloWatt Aldrans transmitter formerly broadcast the ORF domestic service from Innsbruck, but from the Moosbrunn centre it will be used for External Services

from 0700 to 2000, on the familiar Aldrans outlet of 6000 in the 49 metre band. Austria will also use 6000 for External Service programmes between 0500 and 0700, and again from 2000 to 2200, but these broadcasts will be via a 50 kiloWatt transmitter.

For the current broadcast period until early March, Austrian Radio has scheduled broadcasts to Australia and New Zealand daily between 0700 and 0900 on 15270 and from 1000 to 1200 on 15275. Half hour English programmes are included in these broadcasts at 0830 and 1030. The 0700 to 0900 broadcast is also available on 15410 (beamed to the Far East) while the additional channel of 11660 is available during the 1000 to 1200 broadcast (beamed to East Asia).

WRNO ROCKS ON

Undeterred by being the official shortwave station at the spectacularly unsuccessful New Orleans World's Fair recently, station WRNO introduced a new broadcasting schedule in November.

The following schedule should be in use until early in March:

1600 to 2100 on 15420
2100 to 2300 on 11890
2300 to 0100 on 9852.5
0100 to 0300 on 7355
0300 to 0600 on 6185

WRNO also has special Sunday transmissions, and these are currently scheduled between 0600 and 1200 on 6185, from 1200 to 1400 on 9715, and between 1400 and 1600 on 11965. Although WRNO generally broadcasts a rock music format, the Sunday transmissions include many features presented by religious organisations based in the United States. These religious features are often in European languages.

MARIANAS ISLANDS UPDATE

Station KFBS on Saipan in the Marianas Islands was due to activate a new shortwave transmitter during November. However, monitoring here in Melbourne shows that KFBS is still only operating with a single transmitter.

The Saipan station is heard with good signals during programmes on 15115 until 1300 sign-off. KFBS then switches to 15350 from 1305. Broadcasts in our mornings can be heard on 15225, from 2200 to Midnight UTC.

When KFBS's new transmitter does come on the air, it is likely to use this schedule:

1300 to 1600, and from 2100 to 2300, on 9515
0900 to 1100 using 11720
1100 to 1300 using 11880

If you reported KFBS during the early broadcasts back in February and March 1984, then you should have received your QSL card by now. If you haven't though, be patient, as mine was delivered some 5

Listening

months after the date it was posted from Japan!

NEW INTERNATIONAL STATION IN AFRICA

The small nation of Equatorial Guinea recently commenced an International Service the shortwave bands.

Operating in the 19 metre band on the frequency of 15107, the station can often be heard during our mornings between 2100 and sign-off at 2200. Broadcasting from the town of Bata, the station presents an unusual mixture of African high-life music, Spanish announcements, and English language religious features. The International Service requests reception reports, and these should be sent to: Box 851, Malabo, Equatorial Guinea.

One overseas DXer recently sent a reception report in quest of a QSL card to the station. Thinking the person issuing QSLs at the station to be a lady, he enclosed several pairs of stockings with the hope that this would encourage a reply. The DXer received a QSL alright, and the secretary at the station thanked the DXer for the stockings, which he had given to his wife for her birthday!

LAOS FOREIGN SERVICE RE-ACTIVATES

After some months of apparent inactivity, the Foreign Service of the Lao National Radio in Vientiane has again been heard.

During late November/early December, Vientiane has been monitored here in Melbourne on 7122 in the 41 metre band. Laos presents programmes in Cambodian at 230, French at 1300, and English from 1330 to 1400. As is usual with Vientiane's Foreign Service transmitter, the frequency is unstable and the signal quite weak. This contrasts with Vientiane's domestic service shortwave broadcasts on 6130 in the 49 metre band, which are regularly audible between 1230 and 1600.

NETHERLANDS USES NEW MODULATION SYSTEM FROM FLEVOLAND

Radio Netherlands commenced use of the new transmitter base in Flevoland during November. Flevo base will soon completely replace the Lopik transmitting station for all Dutch-based broadcasts from Radio Netherlands.

As from January 14, the Flevo station will take over all broadcasts from the Lopik site in the time period 1125 to 0830. Until January 11, English broadcasts from the new Flevoland station are scheduled at 0700 on 5955, 9630, 9895, and 11930, at 0390 using 5955, 9895, 11930, and 15560, and then from 1330 using 5955, 9895, 11935 and 17605.

Radio Netherlands' programme for radio

enthusiasts, "Media Network", has stated that the Flevoland transmitters are using a relatively new type of modulation system, known as Dynamic Amplitude Modulation or DAM. The difference between the DAM system and the AM system used in most shortwave broadcasting is that where AM has consistent carrier power throughout transmission, DAM has reduced carrier power during the very short times when there is no, or low, modulation. This will produce a significant saving in energy costs for Radio Netherlands. The DAM system is fully compatible with normal AM, and would not cause a loss of audio quality from Flevo.

Radio Netherlands is keen to receive reception reports of the Flevo broadcasts, and these should be sent to: Test transmissions, Frequency Bureau, Radio Netherlands, Box 222, Hilversum, Netherlands.

NEW TIME FOR "LISTENERS' LOG" FROM GUAM

Don Rhodes of Melbourne tells me that the popular "DX Listeners' Log" programme on station KTWR Guam has been retimed.

This programme for shortwave listeners and DXers can now be heard every Saturday at these times.

At 0958, on 11840

-At 1530, on 9535 (this frequency has replaced 9510)

and at 0043 on 17790.

The programme at 0958 Saturdays is the best heard and most conveniently timed edition for reception here in Australia.

IRAQ BOOSTS SHORTWAVE OUTPUT

Iraqi Radio in Baghdad is being very well heard these days, probably due to the fact that Iraq has spent up big to install many new high powered shortwave transmitters.

The Arabic language "Voice of the Masses" broadcast is well heard in our afternoons, between about 0500 and 0800, on both 9630 and 9690. During our mornings, this service has recently been noted on many outlets such as 11700, 11750, 7285, 7260, and 7230.

Baghdad's English service can be heard from 2130 each day, and the current frequency for this broadcast is 9610. This broadcast goes under the title of Radio Baghdad International.

PAKISTAN LETS OUT SECRETS

Getting hold of a detailed schedule from Radio Pakistan for their shortwave broadcasts is sometimes difficult. You would think the station was broadcasting some secrets they don't want the world to know about!

A Radio Pakistan schedule has, however, recently fallen on my desk, and it shows the following English broadcasts:

0230 to 0245 for South East Asia on 17660, 15175, and 7315.

1100 to 1115 for Western Europe on 15595 and 17660.

and 1600 to 1615 for the Arab Gulf, Middle East and Africa, using 11670, 15595, 17660, 21475, 15580, and 17890.

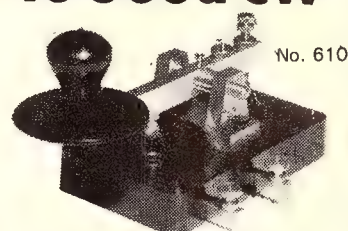
These broadcasts are all slow speed news bulletins, and just in case you miss anything in the bulletin, they repeat each story!

In addition, Radio Pakistan says they would be very interested to receive reception reports of the 1100-1115 service, as well as reports of the World Service broadcast from 0715 to 1100 on 15595 and 17660, and the World Service programme from 1645 to 1900 on 9485 and 12015.

Reception reports should be directed to: Research Section, Pakistan Broadcasting Corporation (External Services), Broadcasting House, Islamabad.

BY PETER BUNN for the Australian Radio DX Club (ARDXC). ARDXC is a non-profit hobby group promoting long-distance reception of broadcasting stations. More information and a sample copy of the club's monthly bulletin "Australian DX News" may be obtained for 3 x 30c stamps from: PO Box 36, North Brighton, Vic. 3186.

The Key to Good CW



No. 610

Clipsal's No. 610

MORSE CODE KEYS

Arguably the best in Australia, Clipsal Morse keys have been precision built for over 40 years. Solid brass components and silver plated contacts ensure a robust and lasting, trouble-free life.

Spring tension is adjustable to minimise wrist fatigue when transmitting for long periods and these quality Clipsal keys are beautifully balanced for fast, reliable operation.

No. 610 \$47 Post Paid Aust.

Available from,

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Ph. (07) 268 5554

COMPUTER MART

The best way to advertise
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hardware and software ... and it's

FREE *

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offering equipment for private sale
or for Wanted advertisements to a
maximum of 25 words.

Longer advertisements are available at a nominal
charge of \$2 per extra 25 words or part thereof.
Repeat and retail advertising available at special rates
... for details contact
Peter Smith VK3NSV on (03) 605 4203.

VK2 AREA

UR THOUSAND five hundred Volt, 100 pF variable capacitors, \$25, smaller ones with ceramic insulation, 5. VK2ZAB, 59 Wideview Rd, Berowra Heights, NSW 2232, phone (02) 456 4163.

ESU FP-107E 20 Amp 5V power supply for FT-7M, excellent condition, will ap for FP-707 to suit FT-7. VK2AP Blackheath (047) 7003.

CILLOSCOPE Dick Smith, a kit, unmarked, boxed, 35, any trial. Dentron ATU, O. Gosford area. Phone (3) 92 1969.

ENWOOD TS-520S transceiver, brand new, in original cking, with MC microphone, enwood antenna tuner, also esu linear. Must sell, accept st offer. VK2AE/AGW (02) 5093.

COM IC-2A transceiver, battery pack, mobile charger, speaker microphone, carry case, manuals, excellent condition,

CLASSIFIEDS

COMPUTERISED BEAM HEADING LIST

To be a successful DX operator you really need to have everything just right — top rig, top antenna system — and that costs bulk cash. But, you could well be wasting all that time, effort and money by not aiming your beam at the country or city that you're chasing...

At best, the traditional Great Circle map can only give you a rough approximation of what compass bearing you require. If you're a few degrees out in your heading you could literally be thousands of kilometres out at the other end.

My list of beam headings is based on the latitude and longitude of your own QTH. Each list is based on these figures and is applicable only to *your* QTH. The list includes the callsign, country, city at which the heading is directed, short and long path headings, distance in miles/kilometres. There are over 400 individual headings including a complete breakdown on American and Canadian states.

These lists have been tried and tested by hundreds of satisfied operators and they have been sold as far afield as Greenland and Korea. The cost is a once only outlay of \$7.50 for a list that will last you a lifetime of DXing.

If possible, send your lat/long co-ordinates (if not, we can check it out) along with payment of \$7.50 to BINT SERVICES, PO Box 323, Cheltenham, 3192, Vic. You'll have your own beam heading list within a couple of days.

PS: We can do you a nice QSL card too — see advert. elsewhere in magazine.

(Reg office: 94 Koornalla Cr, Mt Eliza).

tion, original packing, \$250 or offers. Phone Paul (02) 982 8441 home or (02) 399 4741 business.

ICOM IC-701 transceiver, \$550. Daiwa CNW-418, \$220, IC-255A, \$300. FT-290R complete, \$300. IC502, \$100. F:707, \$150. 2kVA generator, \$400. Ron VK2EFJ, QTHR Wentworth, phone (050) 27 3262.

ELCON GENEMOTOR input 12.75V DC, Output 550V DC at 0.35A, year 1943, \$10. Bobanlou, 8 Sherwood Rd, Kempsey, phone (0645) 62 6434.

DAIWA DR-7500X rotator, preset controller, 30 metres 6-core cable, all as new, \$200 ono. Kel Williams VK2EWW, 7 Campbell St, Queanbeyan 2620.

ICOM IC-710 Japanese domestic model of ic-720, with RM-2 processor mike, \$650. Icom IC-505, \$250. Mint condition, manuals, cartons, etc. Leader TE-20D, \$35. John VK2KFE (067) 42 0003.

AWA NO 11 SET \$100, needs a little work, also AWA

computer-mart

Readers of Amateur Radio Action may use the COMPUTER-MART column to the extent of 24 words without charge for private sale or wanted advertisements. A nominal charge of \$2 for each additional 25 words or part thereof will apply and photographs may also be included at a cost of \$2 — limit one photo per advertisement.

Advertisements of a commercial nature or repeat sale advertisements will be accepted subject to special advertiser rates. For details, phone Peter Smith on (03) 605 4203.

Every attempt will be made to ensure that advertisements are included in the next available issue but inclusion is not guaranteed in any way.

The publishers reserve the right to reject any advertisement

which is considered unsuitable for inclusion and no correspondence will be entered into.

All advertisements must comply with the Victorian Consumer Affairs Act (1972). Readers must be aware that Post Office boxes cannot be included without the full name and residential address of the box holder. These details must appear in the body of the advertisement.

This form is not to be used for normal classified advertisements. A separate form is included for this purpose.

Amateur Radio Action, Computer Mart, GPO Box 628E, Melbourne 3001, Australia.

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11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Name.....

Address.....

510 set. For details, phone (044) 65 1109. Doug Mackintosh, c/-PO Kangaroo Valley 2577.

YAESU FRG-7700 communications receiver, FRV-7700 VHF converter, mint condition, manufacturers cartons, wire aerial, 12 volt conversion kit included. Reluctant sale due to illness, \$575. Phone (065) 85 0202.

YAESU FT-620, \$275. Swan 350C, 230XC PSU, new finals, manual, original packing, \$350. 240-110V transformer Fergusson 200VA, handle, \$50. All very good condition. Robert VK2BBR (066) 24 3445.

4CX250B TUBE new complete with base and chimney, also several others, used but good. Will exchange for 572B tubes or cash equivalent. VK2SV QTH-R (065) 82 1114.

YAESU FT-707 hf transceiver, immaculate condition, \$495. Kyokuto FM-2025 Mk 2 two metre transceiver, \$210. FT-101B hf transceiver and G3LL clipper plus external vfo, \$325. VK2AOE QTH-R (02) 449 6364.

CLASSIFIEDS

WANTED: TILT-OVER tower, preferably self-supporting heavy duty, rotator. Reverse charges to Jim VK2ESI, 7 Esmonde St, Lismore, phone 21 6240.

COMMERCIAL LOW BAND transceiver, FM, converted to six metre band, also Kenwood SP-820, SP-520 speak unit. Peter VK2APJ (047) 59 1651.

UHF TRANSCEIVER kit 95 percent complete, with s-meter and repeater upgrade kit,

\$150. 3.9 dB gain 10m/CB antenna, new in box, \$49. Barry (02) 520 2867. Box 255, Engadine 2233.

40 CHANNEL AM CB radios, brand new in box, \$89. 3.9 dB gain base antenna, \$49. Never used. Barry (02) 520 2867.

VK3 AREA

YAESU FT-707 with mike, handbook, original packing, excellent condition, \$500. Bruce VK3DHT (03) 870 8489.

IMPORTANT INFORMATION

Amateur Radio Action has, for the past two years, taken a strict line on the type of advertisement which will be included in our FREE CLASSIFIEDS section. Advertisements of a repeat nature or for **commercial quantities** of equipment will not be accepted — sellers should negotiate with our advertising department. Advertisements which offer equipment capable of **general coverage transmission** or which are modified to transmit on the **27 MHz CB band** will be rejected without explanation. Advertisements from persons wanting to purchase Amateur transmitting equipment will not be accepted unless the advertiser is a Licensed Amateur. These policies have been adopted in the interests of protecting the Amateur Radio Service.

YAESU FT-901DM all mode HF transceiver, excellent condition, new final and driver tube, very clean set, \$800. Phone (051) 56 9205 after 6 pm.

WANTED: COPY of more keyer in EA mag, March 1977. Please cost return VK3VSM MA Martin, 8 Taylor Ave, Rensselaire 3073.

VALVES: 807's \$3. 5B254 (Loctal 807) \$3. CRT's 902 \$3. 3EG1 \$5 with sockets. Phone (03) 598 3569.

YAESU FT-101B as new, used only once, perfect condition, with mike, handbook, etch, \$500. Ask for Angel VK3YNC (059) 68 4447.

BEARCAT 150-FB scanner, 10 channels, 66-68, 144-148, 148-174, 406-470, 470-490 MHz, as new, \$115. Arthur (053) 34 0442.

PHONE PATCH by Tara, new, cost \$595, sell \$350. Telecom Permit No. C81/12/29. Phone Rick (03) 728 2706 or "Idaville", Lewisham, Montrose 3765.

All telephones at our Melbourne editorial office now have direct dialling telephone numbers



EDITORIAL
Tony Gilbert
(03) 605 4261

ADVERTISING
Peter Smith
(03) 605 4203

SUBSCRIPTIONS
Sue Pargeter
(03) 605 4205

BACK ISSUES
Peter Jackson
(03) 605 4206

ADVERTISER ACCOUNTS
(03) 60 0421
extension 2071

WANTED: Four new 6KD6 tubes for FLDX-2000 linear amplifier. Phone (03) 798 302 AH or 542 3847. VK3CLH QTH-R.

SELL VARIOUS radio books and gear, very reasonable price, Jack (03) 386 2795.

WANTED: Command receiver IC 946B, 520 kHz to 1.5 MHz, any condition. VK3ZF QTH-R (03) 435 1967.

ANTENNAS: HB-35C five element beam, \$299. HB-43DX four element four band beam, \$449. As new in cartons, six foot 20m helical whip free with each beam. VK3ARZ (03) 584 9512.

COM IC-2A two metre portable complete with charger and all books. Deceased estate late VK3ZCQ, \$200. Phone John (03) 437 1859 AH.

YAGI ANTENNA Hidaka for 20, 15 & 10 metres, with balun transformer, 20 metres of RG-8U coax cable, \$200. Phone Joe VK3TS (03) 729 2802.

CLASSIFIEDS

ATTENTION ICOM/KENWOOD owners! If you're not receiving our monthly newsletters you are not tuned into a wealth of information — details 2 IRC's. Free brochure, sample **USERS INTERNATIONAL RADIO CLUB, 364 KILPATRICK AVE, PORT ST. LUCIE, FL 33462 USA.**

LISTEN TO THE WORLD — DXing is the scientific hobby for active listeners to the shortwave, mediumwave, utility, FM and amateur bands. Monitoring, reception, reporting and receiving QSLs from stations worldwide make DXing a hobby for all ages. Australian Radio DX Club members receive the monthly "Australian DX News", full of loggings, QSL notes, equipment reviews, station news, schedules and club activities. ARDXC welcomes newcomers to SWling and DXing. An excellent range of club publications and services are available to members. For full details and a sample copy of "Australian DX News", send three 30c stamps to: ARDXC, PO Box 36, North Brighton 3186. Mention ARA!

DISCOUNTED IRC'S

Why pay 70c each when you can buy them 'second hand' for only 45c each (40c to DUDX members). Still work just as well! Send SASE and cheque to Les Cullen VK2WU, PO Box 31, Winmalee 2777, or phone (02) 237 0505 during business hours.

VK4 AREA

YAESU FT-200 transceiver with FP-200 power supply, \$200. Mike Clark VK4ACM. Phone (074) 65 3261 QTH-R.

OUT OF ROOM sale: 85 copies of Amateur Radio Action from Volume 1, Issue 1, through to this edition (3 copies missing) \$75 the lot, 91 random copies of ETI 1971 — 1981 \$30, 97 random copies of EA 1946 — 1983 \$50, 46 random copies CQ, 73 1977 — 1981, \$30 and 85 copies of Amateur Radio 1978 — 1984 \$30. VK4NGW QTH-R (07) 341 5039.

YAESU FT-290R perfect condition, \$300. Yaesu gutter grip plus 2, 80, 20, 15 & 10 metre resonators, good condition, the lot \$90. Contact Paul VK4APN QTH-R phone (07) 296 1274.

COMPLETE STATION Yaesu FT-707, FP-707, FC-707, FV-707DM plus mobile bracket, good condition, with manuals and cartons, the lot for \$1000. 10 & 15 metre Yagis, \$70 each. VK4NSR QTH-R phone (07) 205 4816.

advertise free

Readers of **AMATEUR RADIO ACTION** may use these classifieds columns to the extent of 25 words without charge. Classifieds which contain more than 25 words will not be guaranteed inclusion in the next available issue. Address and telephone number will be counted as wordage.

Advertisements from commercial establishments, or advertisements which are of a repeat sale nature, will not be accepted except as display advertising.

Photographs may be submitted for inclusion with advertisements but will not be guaranteed inclusion unless the advertisement is paid for at display advertising rates. Every attempt will be made to ensure that the advertisement is included in the next available issue

but priority is given on a first come, first served basis as space permits. The publishers reserve the right to reject any advertisement which is considered unsuitable for inclusion and no correspondence will be entered into. All advertisements must comply with the Victorian Consumer Affairs Act (1972).

Readers should be aware that Post Office boxes cannot be included without the full name and residential address of the box holder. These details must appear in the body of the advertisement. No advertisement will be accepted which does not contain the full name, residential address and call sign (where applicable) of the advertiser at the bottom of the coupon. This information is not for publication.

**Amateur Radio Action, Classifieds Dept.,
GPO Box 628E, Melbourne 3001, Australia.**

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Address.....

5 BAND VERTICAL must sell, good condition, model WB-A \$70 ono. Dipole 80 & 40m, balun, coax, \$20 ono. Rob VK4CRM (076) 35 0142. QTH-R as VK4VRM.

VK6 AREA

DICK SMITH AERIAL five band trap vertical, never used, never assembled, no reasonable offer refused. VK6ZRM SMQ 2-25 Dampier, phone (091) 85 1000 ext 2352 BH, Richard Burden.

VK7 AREA

DRAKE SSR-1 receiver, excellent condition, \$160 ono. VK7BC (003) 30 1379.

TO EXCHANGE: EAT-300 antenna tuner, brand new, for early model Clipsal morse key. Phone (004) 91 1697 VK7ZW.

VK8 AREA

WANTED: Kenwood VFO-520, TV-502, electronic keyer and paddle, kW plus linear amp (HF), SSTV units, CW filter for TS-520S, working or repairable. Eddie VK8XX (089) 72 2880.

WANTED: Linear amplifiers, any condition, but must have

CLASSIFIEDS

CAVEAT EMPTOR — BUYER BEWARE

The acceptance of for sale advertisements in the ARA CLASSIFIEDS does not warrant in any way that the goods are available, free of any incumbrances, in working order or otherwise satisfactory. The purchase of goods by private sale does not offer the purchaser any protection under law and buyers should be certain the goods under consideration are suitable for the purpose for which they are required. Amateur Radio Action cannot accept any responsibility for goods advertised in these classifieds and no correspondence will be entered into regarding such goods. The onus is on you.

88 series valve(s) or good power supply, like SB-230.

Phone Peter VK8ZIX (089) 52 3494 after hours.

COMPUTAMART

MICROBEE IC32 series complete handbooks, "Wordbee", "Telcom", "Monitor." fitted in ROM. No further use. Thirty cassette programs included. All offers considered. Call VK2BBD QTHR (067) 69 6622.

MORSE CODE TRAINER program for Commodore 64 or

VIC-20. Features 1. Receive: (a) plain text, sample exam plus other text (disk version 99 exam length texts); (b) random groups, user-selected letters only or mixture of letters and numbers; (c) random groups as above, each character sent twice; (d) random groups user-selected problem characters. 2.

Send: (a) from keyboard, press key, hear code; (b) graphic display of code on screen; (c) practice-tape maker, make tapes of user-selected text. 3. General: speed variable 1-60 wpm; spacing between characters variable, VK exam standard timing used; VIC-20 tape version split into two parts for unexpanded VIC. Tapes \$5, disks \$10. Neil Cornish, 56 Sherwin Ave., Castle Hill 2154, NSW.

WANTED: COMMODORE 64 home computer with or without peripherals at realistic price. Require hardware only plus instruction books — no software please. Keyboard-only or keyboard with disk drive and printer. Price and details to ARA, GPO Box 628E, Melbourne 3001.

SELLING YOUR COMPUTER? If you're thinking of buying or selling a computer or computer-related gear, use ARA's COMPUTER MART form which appears in this issue. Up to 25 words free to readers of ARA. Additional text and display advertising at attractive rates. Contact Peter Smith VK3NSV on (03) 605 4203 for rate information.

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amateur radio action

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DON'T MISS OUT on your copy of **Amateur Radio Action**. There's only one way to be really sure that you will receive each and every copy of **Amateur Radio Action** — and that's by enrolling on our subscription lists. And it won't cost you any more than buying one at the newsagent. That's right, we are offering

13 issues for only \$22.10 post free.

Simply fill out the coupon below, enclose a cheque/money order/postal order for \$22.10 and you will be put on our subscription list to receive the next 13 copies of **AMATEUR RADIO ACTION** through the post.



Please put me down for 13 editions of **Amateur Radio Action**, starting NOW!

RATES: Within Australia \$22.10. Surface mail to NZ, PNG, and Asia \$31.20. Surface mail elsewhere \$32.50. Air mail to NZ and PNG \$44.20. Airmail to Indonesia and Malaysia \$49.40. Airmail India and Japan \$55.90. Airmail USA \$65.65. Airmail Europe \$68.90.

Herewith enclosed cheque/postal note/money order to the value of: \$

Name

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Post to: **Amateur Radio Action Subscriptions**, Box 628E, Melbourne, 3001.

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ACCESS TO ACTION

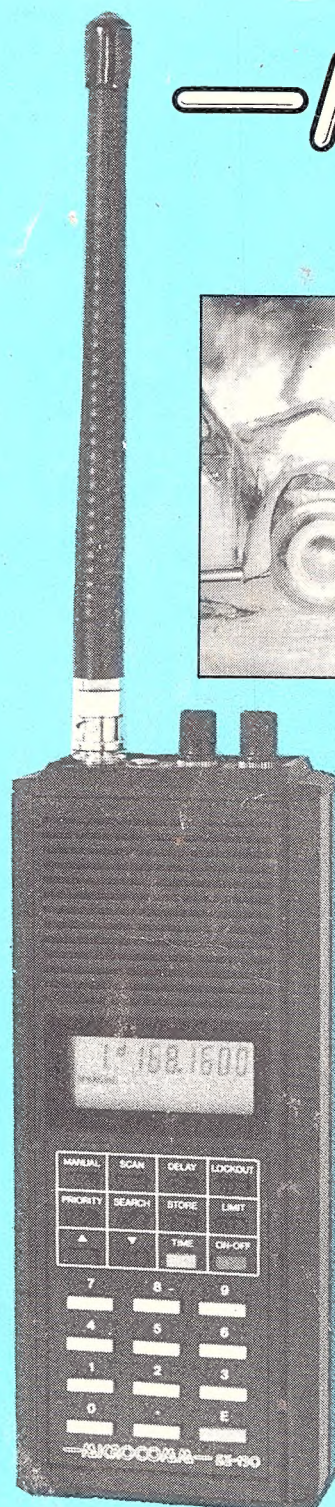


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FOR 1984**

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138
to
176
and
380
to
512
MHz



PROGRAMMABLE POCKET SCANNER WITH OVER 16,900 CHANNELS & 160 MEMORIES

—SX-155—

The Microcomm SX-155 represents the latest developments in State-of-the-art LSI CMOS technology as applied to scanning monitor receivers. It incorporates many features, a lot of which are not even found in today's larger base scanners.

For example the SX-155 has 160 memory channels which can be programmed in either of two modes. The first allows you to manually program the entire 160 channels. The second mode provides for manual programming of the first 40 channels with the top 120 reserved for use by the SX-155 while in its SEARCH mode. It uses these channels to automatically store frequencies on which it has found signals during the search phase.

The SX-155 also features a Priority Channel (for that important frequency). An LCD display providing readout of all receiver functions including an accurate crystal controlled 24 hour clock. Supplied complete with rechargeable Nicad batteries, charger, and BNC rubber duck antenna, the SX-155 is a must for anybody with an interest in monitoring.



AUSTRALIAN DISTRIBUTOR

GFS ELECTRONIC IMPORTS

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